5000-5-20-'09

PRESENTED TO

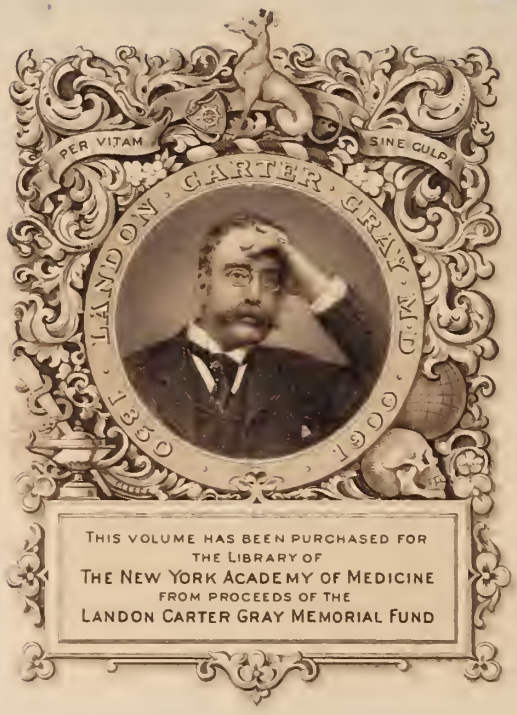
Pat.

The New York Academy of Medicine.

THE ANNA WOERISHOFFER
LIBRARY FUND

ESTABLISHED 1897

Pat.



THIS VOLUME HAS BEEN PURCHASED FOR
THE LIBRARY OF
THE NEW YORK ACADEMY OF MEDICINE
FROM PROCEEDS OF THE
LANDON CARTER GRAY MEMORIAL FUND

Digitized by the Internet Archive
in 2017 with funding from
The National Endowment for the Humanities and the Arcadia Fund

https://archive.org/details/virginiamedicalm53unse

Virginia Medical Monthly

Official Organ of the Medical Society of Virginia

Index to Volume LIII

APRIL, 1926--MARCH, 1927

Inclusive

THE N. Y. ACADEMY
OF MEDICINE
JUN 24 1907
147531
LIBRARY

THE N. Y. ACAD... OF MEDICINE
APR 12 1926
LIBRARY

Virginia Medical Monthly

OFFICIAL ORGAN OF THE MEDICAL SOCIETY OF VIRGINIA

Vol. 53, No. 1.
WHOLE No. 886.

RICHMOND, VA., APRIL 1926

$2.00 A YEAR
20 CENTS A COPY

CONTENTS.

ORIGINIAL COMMUNICATIONS:

The Present Status of the Treatment of Ulcer of the Stomach and Duodenum. A. Murat Willis, M. D., Richmond, Va. 1

Simple Ulcer of the Small Intestine. I. A. Bigger, M. D., University, Va. 4

A Valuable Diagnostic Sign in the Early Ataxic Stage of Tabes. J. Allison Hodges, M. D., Richmond, Va. 7

The Indications and Limitations of Antiluetic Drugs. T. Latane Driscoll, M. D., Richmond, Va. 8

Treatment of Pneumonia. B. M. Randolph, M. D., Washington, D. C. 10

Treatment of Hemorrhoids by Injection. E. H. Terrell, M. D., Richmond, Va. 13

Medico-Legal Aspects of Morbid Impulses. Alfred Gordon, M. D., Philadelphia, Pa. 16

Experience with Non-Surgical Drainage of the Bile Tract by the Lyon Method. Alexander G. Brown, Jr., M. D., Richmond, Va. 22

Exophoria—Analysis and Treatment of One Hundred and Sixty-Seven Cases. Charles A. Young, M. D., M. Med. Sc., Roanoke, Va. 25

The Treatment of Chronic Empyema. Arthur Sumner Brinkley, M. D., Richmond, Va. 27

Uterine Curettage, Its Limitations. E. L. Kendig, M. D., Victoria, Va. 28

The Care of the Mind, A Preventive of Physical and Nervous Diseases. Bittle C. Keister, M. D., Washington, D. C. 31

Benign Tumors of the Male Breast. Frank Helvestine, Jr., M. D., Danville, Va. 35

Internal Injuries Without External Signs—Case Reports. Beverley F. Eckles, M. D., Richmond, Va. 38

Medical Treatment of Peptic Ulcer. Geo. P. Hamner, M. D., Lynchburg, Va. 40

Chronic Gall-Bladder Disease—Its Medical Aspects. William J. Mallory, A. M., M. D., Washington, D. C. 41

Caesarean Section: Types and Technique. Howard F. Kane, A. B., M. D., F. A. C. S., Washington, D. C. 43

Achlorhydria—A Clinical Study of One Hundred Cases. DeWitt Hamrick, B. A., and J. Edwin Wood, Jr., M. D., University, Va. 48

A Review of the Chief Medical Literature of Nineteen Hundred and Twenty-Five. Wyndham B. Blanton, M. D., Richmond, Va. 51

Complications of Tonsillectomy. G. B. Gilmore, M. D., New York, N. Y. 55

PROCEEDINGS OF SOCIETIES 56

THE TRUTH ABOUT MEDICINE 58

BOOK ANNOUNCEMENTS 59

EDITORIAL 60

NEWS NOTES 64

OBITUARY 70

INDEX OF ADVERTISERS—Advertising Page 5.

CALCREOSE

Corrects the Faults of Creosote

In bronchial affections, especially acute and chronic bronchitis, in colds and in tuberculosis, creosote is a remedy of acknowledged value.

Calcreose—a loosely combined product of creosote and hydrated calcium oxide—largely overcomes the gastric disturbance usually associated with the administration of creosote. It is well tolerated, slowly absorbed and combines the beneficial effects of creosote and lime.

Calcreose can be given in large doses for long periods without apparent difficulty.

Powder: Tablets: Solution

Samples of Tablets on Request

THE MALTBIE CHEMICAL COMPANY

Newark, New Jersey

INFANT DIET MEAD'S MATERIALS

Special Powdered Milk

For Infant Feeding

Naturally — the physician wishes to use milk for infant feeding that has been surrounded by every safeguard.

MEAD'S POWDERED MILK is dried by the latest and most scientific process which retains the physiological characteristics of the milk.

MEAD'S POWDERED MILK is made safe by all the resources known to science.

Such milk contains the lowest per cent of moisture and therefore is proof against breeding bacteria.

Such milk is free from a strong cooked taste.

Care is taken to standardize the butterfat content. Each lot of *Mead's Powdered Milk* is the same.

Distributed as

Mead's Powdered Whole Milk
Mead's Powdered Half Skim Milk

Either of these milks, modified with

MEAD'S DEXTRI-MALTOSE

and water, will give satisfactory results in infant feeding. MEAD'S POWDERED MILK solves the problem of a safe milk for infant feeding.

Samples furnished gladly on request

MEAD JOHNSON & COMPANY
Evansville, Indiana, U. S. A.
Manufacturers of Infant Diet Materials

Virginia Medical Monthly

Official Organ of the Medical Society of Virginia

Vol. 53, No. 1.
WHOLE No. 886.

RICHMOND, VA., APRIL, 1926

20 CENTS A COPY
$2.00 A YEAR

Original Communications

THE PRESENT STATUS OF THE TREATMENT OF ULCER OF THE STOMACH AND DUODENUM.*

By A. MURAT WILLIS, M. D., Richmond, Va.

The treatment of ulcer of the stomach and intestine is indeed a hackneyed subject: my excuse in bringing it up for discussion rests solely upon the apparent lack of agreement regarding what may be considered fundamental principles. One is, in a measure, prepared to encounter differences of opinion between the internist, on the one hand, and the surgeon, on the other; it comes somewhat as a surprise, however, to discover that the surgeons are, to a considerable extent, as divided among themselves as they are united against the medical man. It is presented with the hope that a presentation of certain views that have recently been expressed in the literature, together with fairly obvious deductions therefrom, may help to establish harmony and to bring out clearly the definite roles that should be played by the internist and the surgeon, working in close cooperation, to effect a cure.

In a recent article, Sherren discusses the value of gastro-enterostomy in the treatment of duodenal ulcer. According to him, the end results of this surgical procedure far exceed those obtained by any form of medical treatment, whether looked upon from the point of view of cure or of the risk attaching thereto. He further states that it is undoubtedly correct that the mortality of the medical treatment of chronic ulcers is vastly greater than the surgical. Up to January 1, 1924, he had treated 768 cases of duodenal ulcer surgically, chiefly by gastro-enterostomy, with a mortality of a little less than 2 per cent. He has been able to trace 500 cases operated prior to 1922; and is particularly gratified to learn that of this number 463 are and have remained perfectly well; giving a percentage of cures amounting to 92.6 per cent. Of 903 cases of chronic gastric and duodenal ulcer followed for over two years, 774 have remained absolutely well (85.7 per cent); and secondary ulceration occurred in only twenty-nine instances (3.2 per cent). He makes the important statement that "patients who go for two years without symptoms never develop them later."

No less optimistic is the view of Balfour regarding gastro-enterostomy, as expressed before the Surgical Section of the American Medical Association in June, 1924. This author says: "In large surgical clinics where gastro-enterostomy is the operation of choice for chronic duodenal ulcer, satisfactory results are reported in from 80 to 90 per cent of cases." He has gathered information concerning the present condition of 1,000 patients upon whom this operation was performed at the Mayo Clinic more than ten years preceding. The operative mortality, according to Balfour is under 2 per cent; 88 per cent of the patients were relieved of their disagreeable symptoms by the operation; and secondary ulceration occurred in only 3.5 per cent of the cases.

Though dealing with a smaller series of cases, the statistics of Haggard and Floyd, are essentially in agreement with those of Sherren and of Balfour. They say that 85 per cent of their series have been, practically speaking, cured by gastro-enterostomy; their mortality rate was 4.1 per cent; they make no mention of secondary ulceration. They are of the opinion that well placed and well executed gastro-enterostomies in the average case of duodenal ulcer are attended with very gratifying results.

Unfortunately, however, all surgeons do not appear to have been as successful in the treatment of ulcer by gastro-enterostomy as have been those just cited. In discussion of Balfour's paper, Strauss stated: "There are, however, clinics that do not report such a high percentage of excellent results from gastro-enterostomies. For instance, recently in

*Read at the fifty-sixth annual meeting of the Medical Society of Virginia, in Richmond, October 13-16, 1925.

Schmieden's clinic in Germany, out of 250 gastro-enterostomies, 50 per cent were found to be failures." Strauss appears to incline strongly to more radical measures; believing that it is essential in many cases not only to hasten the emptying time of the stomach but also to remove the underlying pathological condition responsible for the ulcer. Clairmont, likewise, reports only about one-half of his cases as cured after gastro-enterostomy; while Sauerbruck, in a series of seventy cases, obtained good results in only 36 per cent. Isaac-Krieger recognizes that gastro-enterostomy is a valuable measure in many instances, but he feels that every time that it is undertaken for the relief of ulcer the future of the patient is shrouded in uncertainty; a cure is frequently the result; but, on the other hand, there is a considerable proportion of cases where not only a failure to obtain relief occurs but the discomforts are definitely increased by the operation.

Lewisohn seriously questions the efficacy of gastro-enterostomy. He states this operation has been employed for over thirty years, and if it had proved entirely satisfactory in that length of time, there would not be the gradual increase in the number of surgeons advocating more radical measures; a trend which points strongly to the conclusion that failures following gastro-enterostomy are very frequent. Lewisohn believes that the generally accepted figure of 5 per cent for the incidence of secondary ulceration after gastro-enterostomy is entirely too low; due to imperfect analysis. He states that many surgeons are unaware of the ultimate fate of a large proportion of their patients: considering "only the few patients who come back to their clinic for re-operation." A perfect follow-up system is necessary before positive conclusions can be drawn; communication by letter is most unsatisfactory; the patients should be seen and examined at frequent intervals.

By a follow-up system which certainly seems to approximate his ideal in its efficiency, Lewisohn has ascertained the results following gastro-enterostomy performed by himself and his associates at Mt. Sinai during the years 1915-20. In striking contrast to the experience of Sherren, Balfour, and other optimistic operators, Lewisohn found that gastro-enterostomy, with or without exclusion, effected a perfect cure in less than 50 per cent of their cases. Even more disheartening was his experience as regards secondary ulceration; this was noted in *over* 34 *per cent of his cases.*

By the study of a series of cases which he admits is too small to be more than suggestive, Forsyth has recently discussed the question as to the relative efficiency of surgical and medical methods in the treatment of duodenal ulcer. His patients were among the beneficiaries of an assurance society; they were all medical men; and they were free to select the method of treatment which they preferred. Of the fifty-nine cases, thirty-three (56 per cent) were treated surgically; twenty-six (44 per cent) selected medical treatment. The mortality in the series subjected to surgical treatment was a little over 9 per cent; none of the medically treated patients succumbed during the period of observation. The average period of invalidity in the surgical cases was five months; in the medical cases four and one-half months. The longest period of invalidity was eleven and one-quarter months: this occurred in a surgically treated patient; the longest period of invalidity for a medically treated patient was six and three-quarters months. An examination of all the cases confirms the view that the cases treated surgically are rather longer before being restored to health. After lapses of time ranging from one to ten years, 36.3 per cent of the operative cases suffered relapses; 38 per cent of the medical cases suffered relapses in the same periods. The author believes that his figures "give no support to the claims to greater effectiveness of either surgical or medical treatment; on the contrary, they show that the results of the two methods leave little to choose between them."

To what are we to ascribe this astounding difference in the results following the operation for duodenal ulcer and gastric ulcer? It cannot be explained by the assumption of greater skill on the part of the advocates of the operation. Among those whose reported results are poor are surgeons whose skill is second scarcely to any. The explanation is probably to be sought in the definition of the word, "cure;" to one operator, the fact that his patient survived the operation and is still able to perform the ordinary duties of life entitles him to be considered as "cured;" to another statistician, the persistence of the

slightest digestive disturbances following the operation is sufficient for him to regard this procedure as having failed. It is a point of some interest that, practically without exception, the surgeons who are dissatified with gastro-enterostomy have a more radical measure that they wish to substitute for this comparatively conservative operation. As Lewisohn says, there is a growing tendency among a group of surgeons in this country, following the lead of European operators, to favor more and more such operations as subtotal gastrectomy. With a mortality in their hands only slightly higher than that following gastro-enterostomy, the results of gastrectomy for the relief of ulcer reported by some of the enthusiastic advocates of the operation are striking in their excellence. But what is to be the ultimate outcome in cases subjected to the removal of a considerable portion of an important organ: with, probably, a complete suppression of hydrochloric acid secretion? Physiologists attribute a role of some importance to this acid in the processes of digestion; it is believed by many to have a most essential influence in regulating the hydrogen ion concentration of the alimentary tract and to regulate fundamentally the character of the intestinal flora. Indeed, there are those who have suggested that the absence of hydrochloric acid from the digestive juices will ultimately result in profound disturbances, pernicious anemia being one of the results which have been ascribed to such an absence. Sufficient time has not yet elapsed to enable us to determine the actual force of objections of this nature; with the passage of years, it may be found that immediate relief from the ulcer symptoms has been purchased only at the price of even more serious disturbances.

That excellent results often follow the application of surgical methods in the treatment of gastric and duodenal ulcer is recognized by the internist as well as the surgeon. We are told of the dire consequences of the delay following the use of medical methods: fatal hemorrhage; perforation; or malignant transformation of the ulcer rendering subsequent surgical intervention of no avail. As a matter of fact, convincing evidence that intelligently applied medical treatment ever aggravated the condition of an ulcer patient is wanting: indeed, honesty impels me to admit that most striking improvement or apparent cure has been the consequence of medical therapy in certain cases of ulcer where the prognosis, as judged from the surgical standpoint, was extremely dubious. We should not lose sight of the fact that surgery is but a branch of medicine; our field is a comparatively restricted one. Every intelligent physician recognizes the necessity of individualization in handling different patients; and our present imperfect knowledge of the etiology of duodenal ulcer and of its course, as evidenced by recovery under medical treatment or even in the absence of any treatment, should make us hesitate immediately to urge surgical operation as soon as a diagnosis is made. Effective treatment of gastric and duodenal ulcer depends upon close co-operation between surgeon and internist: it is my firmly established belief that every case of duodenal ulcer that has not progressed to perforation or is not complicated by pyloric obstruction should be seen by an internist; and that only after a reasonable trial of medical treatment has resulted in failure should resort be had to operation. As has already been indicated, it is extremely unlikely that harm is done by the use of medical methods in the ulcer patient; on the contrary, even in those cases where complete relief is not obtained by this form of therapy and subsequent surgical treatment is deemed necessary, the rest in bed and alkali administration generally effects some improvement and renders the patient a better surgical risk. With surgery, the case is different: it is difficult or actually impossible ever to restore the conditions which have existed prior to operation; and we may see as a consequence of our efforts in this direction not only a failure of the patient to improve but an aggravation of his condition which can be relieved only by subjecting him to a second laparotomy, or which, unhappily, is beyond relief.

In chronic ulcer of the stomach surgery is probably safer and preferable to medical treatment; one of several operations may be done, depending upon the location of the ulcer and skill of the operator: such, for example, as excision of the ulcer, with or without gastro-enterostomy or partial gastrectomy. In duodenal ulcers, surgery is indicated in the chronic type that has resisted proper medical treatment; in cases with pyloric obstruction and in all instances of perforation; using such

operations as excision of ulcer, pyloroplasty (of the Mikulicz or Horsley type), or gastroenterostomy with or without excision of the ulcer.

Surgeons have loudly proclaimed the failure of the medical treatment of ulcer; nevertheless, they stress the importance of post-operative medical treatment of the patients upon whom they have operated. I am unaware of any surgical clinic in this country where a fair trial of medical therapy is made before subjecting the patient to operation; the common procedure is to reach a diagnosis chiefly by roentgenological examination and have immediate recourse to surgery. Indeed, a positive diagnosis may be made only after opening the abdomen in the course of an exploratory operation; and, although the symptoms may have been vague and the physical findings indefinite, more or less radical measures are considered necessary by many operators. Both surgeon and internist should take a broader view of the problem presented by gastric and duodenal ulcer; it does not appeal exclusively to the one or to the other but demands the harmonious co-operation of both these practitioners of the healing art if we are best to serve our patient's needs.

SIMPLE ULCER OF THE SMALL INTESTINE.*

By I. A. BIGGER, M. D., University, Virginia.

Ulcers of small intestine may be due to a number of causes, the most frequent of which are typhoid fever, tuberculosis, dysentery, circulatory disturbances, intestinal obstruction and malignancy. In addition to the usual types we find described, chiefly in the Italian and French literature, an ulcer of the small intestine which is similar in many respects to the simple ulcer of the stomach and duodenum, and also to those described by Dubs[1], Fischer[2] and others, in the large intestine. These ulcers seem to produce few characteristic symptoms. There is a marked tendency to perforate. Hemorrhage has not been noted in any case.

The typical lesion, according to Basile[3], is a small punched out ulcer. The edges are rather smooth but in some cases there is a terraced appearance due to the decrease in the diameter of the opening in each coat of the bowel from within outward. In most instances there is little inflammatory reaction surrounding the lesion. No evidence of any specific cause has been described. The condition apparently occurs rarely, or at least is rarely diagnosed, for Merriel[4] could collect only twenty-six (26) cases from the literature in 1922. His case and five others reported since that time[5, 6, 7] make a total of thirty-two (32) published cases. We wish to add two cases both of which apparently fall into this group.

Case I.

Mr. C. J. W., aged 20, white, a day laborer, entered the University of Virginia Hospital, February 12, 1921. His health had been generally good until one week before admission. He had had the usual diseases of childhood, but no severe illness or accident. His appetite and digestion had been good and there was no history of diarrhea or constipation. He had not passed blood by bowel nor was there any history of abdominal pain. No history of venereal infection.

One week before admission he noticed that he became easily fatigued; that he was constipated and had an occipital headache. He was, however, able to work the day before entering the hospital. February 12th, at 5 A. M., he developed severe pain in the epigastrium, radiating over the abdomen. There was nausea, but no vomiting. When seen, twelve hours later, the abdomen was slightly distended and there was quite marked tenderness over the lower portion, most marked in the right lower quadrant. There was definite rigidity. Examination of heart and lungs was essentially negative. The temperature was 100° F., pulse rate 88, respirations 20 per minute, leucocytes 16,000, and urine negative. The tentative diagnosis was acute appendicitis, and immediate operation advised.

On entering the peritoneal cavity considerable cloudy but practically odorless fluid was found. Examination of the appendix showed no evident inflammation. A small perforation was discovered in the wall of the ileum on the side distal to the mesentery and about three inches above the ileocecal valve. The perforation was two millimeters in diameter and surrounding this was an area of induration about one centimeter in diameter. This area was excised and the bowel closed transversely with mattress sutures of fine silk. The remainder of the bowel in this segment appeared normal. No enlarged Peyer's patches were discovered. The appendix was removed and two cigarette drains inserted.

On examining the mucosal side of the specimen a cone-shaped ulcer, one-half centimeter in diameter, was found. The edges were smooth and relatively clean. Microscopic examination of the margins of the ulcer showed hemorrhage and infiltration with small round cells and polymorphonuclear leucocytes. There was proliferation of tissue cells and capillaries. Nothing was found to suggest typhoid, tuberculosis or neoplasm.

Cultures, taken at operation from the ulcer and from the fluid in the peritoneal cavity, showed only the usual intestinal flora. This was also true of cultures made from the results of sterile enemata. Repeated blood cultures and Widals made following operation were negative. The blood Wassermann was negative.

The patient's recovery was practically uneventful and he was discharged on the thirty-second day after operation in excellent condition.

*Read at the fifty-sixth annual meeting of the Medical Society of Virginia, in Richmond, October 13-16, 1925.

Case II.

E. M., aged 43 years, colored, who entered the University of Virginia Hospital on December 15, 1924, complained of severe abdominal pain of three days' duration.

On December 12th, he developed a severe pain in the right lower quadrant of the abdomen. This pain gradually became generalized and the following day he vomited several times. The day before entering the hospital the pain was more severe, cramp-like in character, and accompanied by frequent vomiting of dark brown material.

When admitted to the ward his temperature was 100, his pulse 130 per minute and of poor quality, and his respirations 26 per minute. Leucocytes were 9,000 per cubic millimeter. His skin was cold and moist and his expression anxious. The heart and lungs were negative. Abdominal examination showed moderate distention with marked fullness below the umbilicus. There was some tenderness throughout, but more marked in the lower portion. A mass was felt projecting through the internal ring into the right inguinal canal. Rectal examination revealed tenderness and a distinct fullness anteriorly. A definite diagnosis was not made.

At operation the mass in the inguinal canal was found to be adherent omentum. There was a large quantity of pus somewhat localized below the level of the umbilicus. Further exploration revealed a perforation about one-half centimeter in diameter, at about the junction of the upper and middle third of the ileum. There was only slight induration surrounding the perforation and the remainder of the bowel showed only inflammation of the peritoneal coat. The ulcer was excised and the bowel closed transversely with mattress sutures of fine silk. An enterostomy was made about three inches above the ulcer site. The peritoneal cavity was flushed with normal saline solution and two cigarette drains inserted.

The ulcer had a characteristic punched out appearance with smooth edges. Microscopic examination of the margin of the ulcer revealed acute and chronic inflammation. There was no evidence of specific infection or of malignancy. Cultures which were made from the ulcer and peritoneal cavity at the time of operation, and a blood culture made three days after operation, showed bacillus coli. Another blood culture made eight days after operation was negative. The blood Wassermann and Widal reactions were negative.

The abdominal incision became infected and on the eighth post-operative day crepitus was detected around the wound. Smears and cultures showed the bacillus aerogenes capsulatus. All necrotic tissue was removed and multiple incisions made in the abdominal muscles around the wound. He was given 400 cubic centimeters of gas bacillus antitoxin intravenously within the next twenty-four hours. There was no further spread of this infection and healthy granulations soon appeared.

The patient, however, continued to vomit and show other evidences of peritonitis. Death occurred on December 30th, fifteen days after operation.

The most important autopsy findings were acute diffuse peritonitis, acute nephritis and broncho-pneumonia with pulmonary edema. The intestinal mucosa showed no distinctive changes and in dissecting the mesentery the blood supply appeared normal. A prune seed was found near the site of the ulcer. No intestinal parasites were discovered.

Discussion

The symptoms of simple ulcer of the small intestine would seem to be very indefinite, even absent in many cases, until complicated by either perforation or obstruction.

Charbrut[6] states that these lesions are never recognized until perforation occurs. In one of our cases there was a history of some general malaise for one week before perforation occurred, but examination of the ulcer showed evidence of new tissue formation which would indicate that the ulcer had been present for a considerable period of time. In the other case there were no symptoms until perforation occurred although there was some evidence of tissue regeneration in the margin of the ulcer. The diagnosis in these cases is obscure and in the majority of those reported the pre-operative diagnosis was appendicitis.

The gross and microscopic picture as shown in our two cases was similar to that described in the literature and in turn to that seen in simple ulcer of the remainder of the gastro-intestinal tract. However, in Case II the acute inflammatory reaction was more marked than is usually found. In both cases the ulcers were definitely the punched out type and there was nothing to indicate a specific cause. The absence of any evidence of specific infection was supported by the negative clinical findings and histories.

The etiology of these ulcers has not been definitely determined, as is the case in simple ulcer of the stomach and duodenum. A case reported by Fischer[2] was first diagnosed simple ulcer of intestine but at autopsy the patient was found to have a hypernephroma of the left kidney with metastases to the mesentery of the bowel adjacent to the perforation. Fisher concluded that the ulcer was metastatic and had so completely broken down that no trace of the tumor was left. Makai[9] considered this extremely improbable and believed it to be a true case of simple ulcer.

Brigidi[10] reported a case in which he found multiple ulcers of the lower ileum, and in the same segment of bowel hemorrhages in the submucosa with partial destruction of the mucosa. It was his opinion that the ulcers were the result of pressure from the extravasated blood.

A case of repeated perforating ulcers of the ileum reported by Gale had many characteristics of the so-called simple ulcer. In this case

there appeared to be a definite relation to a focus of infection in the external auditory canal.

In neither of our cases could the ulcer be attributed to any specific cause. However, in Case II the presence of the prune seed near the site of the ulcer suggested trauma as a possible causative factor.

REFERENCES

1. Ulcer, Simple Perforating of Large Intestines (J. Dubs) Deutsche Ztschr. f. Chir. 150:415, July, 1919.
2. Differential Diagnosis of Ulcers of Small Intestines (A. W. Fischer) Zentralbl. f. Chir. 48: 1102, Aug. 6, 1921.
3. Simple Ulcer of Intestine (G. Basile) Policlinico (Sez. Prat.) 27:1410, Dec. 6, 1920.
4. Ulcers of Ileum, (Meriel). Bull. Acad. de Med. Paris 88:613, Dec. 19, 1922.
5. Simple Ulcer of Ileum (J. Rutkowski) Lyon Chir., 21:11-12, Jan., 1924.
6. Perforating Ulcer of Small Intestine (M. Charbrut), Paris Med. 13:124-127, Aug. 11, 1923.
7. Simple Ulcers of Jejunum and Ileum, with Notes of Two Cases (K. P. Brown), Edinburgh M. J., 31:45-57, Jan., 1924.
8. Ulcers, Simple of Intestine (E. Makai) Zentralbl. f. Chir., 48-1583, Oct. 29, 1921.
9. Ulcere perforanti nell ultima forzione dell-ileo (V. Brigidi) Gazz. de Osp. Milano, 1893, 14: 1434.
10. Repeated Perforations of Small Intestine Due to Focal Infection (S. S. Gale), J. A. M. A., 79:1047-1048, Sept. 23, 1922.

DISCUSSION OF PAPERS BY DR. WILLIS AND DR. BIGGER, ON ULCER OF STOMACH AND INTESTINE.

DR. JAMES W. HUNTER, *Norfolk*:—I do not know when I heard two papers of greater import than these two to which we have just listened. In 1918 I spent a few days at the Mayo Clinic. At that time Dr. Charles Mayo was inclined to believe all cases of ulcer after gastro-jejunostomy as due to linen thread. Within the last few weeks Dr. Moore, who is Dr. Carman's right-hand man, read a paper at the meeting of the American Roentgen Ray Society, in which he said that not only those cases, but a large percentage of others developed gastro-jejunal ulcer. I forget Dr. Moore's statistics, but he gave us to understand that the number they had seen was rather large.

I should like to ask Dr. Bigger a question. He reports two cases of ulcer of the small intestine and terminal ileum. I think every surgeon and roentgenologist has seen adhesions around the terminal ileum. The question is whether these are the so-called Lane's kinks, or due to ulcer.

DR. P. ST. L. MONCURE, *Norfolk*:—About fifteen years ago it seemed that everybody was operating for gastric and duodenal ulcer, and operating on symptoms alone. The patients all, for a time, were relieved. I went on with the rest, operated on my cases, and reported some of them. After a time some of them commenced coming back with their complaints, and on two or three of them I had to operate a second time. I am thankful to say that a coupling up of the duodenum with the jejunum relieved the situation. Some of them refused to be operated upon, and we had to do something, so we commenced the medical treatment, and I dare say that most surgeons now operate fifty per cent less than they did ten years ago on these cases. We do find that rest in bed, bismuth, and an alkaline diet and medication will do more for us than surgery—though, of course, there are some cases that require surgical treatment. I simply got up to indorse Dr. Willis' idea of the swinging of the pendulum to the medical treatment. I am glad to indorse his paper, and am glad to say that the trend of surgeons now in the treatment of gastric and duodenal ulcer is toward the medical rather than the surgical side.

DR. DOUGLAS VANDERHOOF, *Richmond*:—This paper of Dr. Willis' is certainly refreshing. I happened to be sitting next to a well known surgeon from Norfolk while Dr. Willis presented his paper, and he said: "It is very interesting, very valuable, a very powerful paper; and also peculiar in that a surgeon should be so strongly advocating medical treatment." However, going back about eighteen years in experience with peptic ulcers, it was our personal custom always to ask for a surgical consultation. A great many of our early cases were treated surgically here and in other clinics, and a good many individuals were seen who had not been previously diagnosed or treated by us, who sought relief for rather aggravated digestive disturbances following gastro-enterostomies or other operations for peptic ulcer. I came to the feeling that surgery relieved about sixty-five per cent of the cases of peptic ulcer, and that it failed, and failed seriously in about thirty-five per cent. Coming at that time into knowledge of the work of Dr. Bertram Sippy, of Chicago, I tried out a modified Sippy treatment, cautiously, and the results were most gratifying, not only in the immediate results, but in giving permanent relief, so that medical treatment is now employed almost as a routine in the treatment of uncomplicated duodenal ulcer.

Patients with gastric ulcer and certain duodenal ulcers are referred to the surgeon because of the possibility of malignancy or the doubtful outcome of medical treatment. Cases with frank hemorrhage are always treated medically. Penetrating ulcers may or may not be treated medically. Acute perforations, of course, are treated surgically. Patients are treated in an ambulatory manner for two years, very seldom requiring hospitalization. They are checked up at intervals of six months, by X-ray examination, preferably by the roentgenologist who diagnosed the case. We are finding in this way that not only can duodenal ulcer be cured symptomatically, but the deformity often disappears. In talking to these individuals, I explain that medical treatment cures approximately only fifty per cent of the cases, but the fifty per cent of failures are observed in the persons who do not follow the treatment.

Immediate operation on a patient found to have a peptic ulcer should be absolutely condemned. Why not give that patient the advantage of medical treatment? I saw the astonishing statement in one of our medical journals that medical treatment is dangerous. I have seen only one patient die under medical treatment, and that was some years ago, before the treatment was perfected. The ulcer continued to ooze, and insistence on our part that it be treated surgically was disregarded. The results of medical treatment are sometimes astonishing. We have had patients come in with a large six-hour residue, who have been relieved without an operation that is serious, that is dangerous, that is often followed by secondary ulceration at the site of the operative procedure, and that fails to afford relief in at least thirty-five per cent of the cases.

Dr. Warren T. Vaughan, *Richmond*:—Assuming that the results from medical and surgical treatment are perhaps about the same, call it fifty per cent or sixty per cent, or call it more, the fact remains that there is a percentage that do not get well from either form of treatment. I just want to bring up the point that it is not a problem of treating the ulcer alone, but of treating the patient. Smithies goes so far as to intimate, though he does not say it outright, that if you will remove all the focal infections, the ulcer will get well anyhow. We might say that the present status of the treatment of ulcer is tonsillectomy! I had occasion recently to go over a series of cases that had been operated on, and while a large number had relief, many had recurrence of symptoms. It was found that a large percentage of the latter had gall-bladder infection at the same time. We should stress particularly the removal of focal infection, the correction of other associated conditions, and the treatment of the patient as a whole.

Dr. I. A. Bigger, *University, closing the discussion*:—About the adhesions around the duodenum, I think it is possible that some of these cases, at least, are due to ulcer. Ulcer may occur without giving any definite symptoms. I can not answer the question definitely, but we do know that some of these patients have had ulcers for a considerable period before the appearance of symptoms.

A VALUABLE DIAGNOSTIC SIGN IN THE EARLY ATAXIC STAGE OF TABES.*

By J. ALLISON HODGES, M. D., Richmond, Va.

Signs are as important as symptoms in many nervous diseases. Only one scientific fact is to be emphasized in this paper, and its discussion will be brief. It relates to the symptomatology of tabes, and the significance of the development early in the ataxic stage of this disease of the "stairs" sign.

This sign is a form of ataxia seldom studied, or even alluded to in text-books, but personal observation has taught me that it is valuable in the diagnosis of the early ataxic stage of tabes. The diagnosis of this disease is both easy and difficult; so easy in the fully developed ataxia or paralytic stage, that the merest tyro will not be deceived, but difficult, and, at times extremely difficult in the early stages, especially when there are no marked evidences of incoordination. It is well known that a tabetic patient is ataxic because of deficiency of afferent impressions, more especially from his muscles and from his joints.

If the muscle tonus of such a patient is impaired or lost, the muscles are hypotonic, thereby making the movement more or less jerky and inharmonious. It is a further well known fact that if the patient closes his eyes the regulating influence of vision is lost, and he becomes more ataxic.

The "stairs" sign, which determines the patient's ability to descend properly a series of stair-steps, with eyes open, but not directed to his feet, or in certain cases, with eyes closed, thus at one time testing both the muscles and joints, appears to me as one of the most delicate and definite tests of ataxia, and one that is often apparent before other signs of ataxia are evident.

This procedure easily suggests any existing incoordination, and then can be definitely determined in the case of tabes by a further study of the kinesthetic sense, and, still more important, the joint sense, together with the condition of the deep and plantar reflexes and other existing signs and symptoms of tabes. Recently, in looking over the records of some cases of tabes which I had had the opportunity of seeing early and following carefully, I found that nine out of twenty-three cases showed evidences of ataxia by this test, before it was demonstrable by other ordinary tests, such as Romberg's sign, the "wash-basin" sign, the "heel and toe" sign, etc., or before other positive tabetic reflexes and manifestations became apparent and rendered a conclusive diagnosis.

This sign, then, is offered, not as superior to other well-known tests, but as one that is easy of application, and, because of its appeal to a joint test at the same time of the muscle and joint senses, manifesting usually earlier indication of incoordination than any other procedure with which I am familiar.

To be conclusively diagnostic of tabes, other conditions, either present, or developing in pathologic sequence, must, of course, be apparent, and must be evaluated correspondingly in a final decision.

5 *East Franklin Street.*

Discussion.

Dr. ———: I should like to ask Dr. Hodges to tell us the details of making this test.

Dr. J. Allison Hodges, *Richmond*, replying to the inquiry: Simply this, to take a short staircase and have your patient abstract his attention from everything else, and, looking straight before him, descend the stairs. If the ataxia is advanced to any degree at all, he cannot lift up his legs, which, of course, is an automatic sense, usually, and put them down properly in descending say eight or ten or a dozen steps, as easily as he could walk on a floor. If it is a case that does not manifest ataxia with the eyes open, with the vision thus abstracted, close the patient's eyes and have him walk down a lesser num-

*Read at the fifty-sixth annual meeting of the Medical Society of Virginia, in Richmond, October 13-16, 1925.

ber of steps, and often you will find ataxia manifested to an extent that you had not anticipated.

It seems to me that it is a very useful test, being earlier manifested than the Romberg and other tests, and, the earlier it is detected in these cases, the more hope of success there is in the treatment.

THE INDICATIONS AND LIMITATIONS OF ANTILUETIC DRUGS.*

By T. LATANE DRISCOLL, M. D., Richmond, Va.
Associate in Syphilology, Medical College of Virginia, Richmond.

The question has been often asked by students in medicine, why give more than one drug in the treatment of syphilis, since arsphenamine is concededly the most potent, and why will arsphenamine in itself not cure, and why the necessity of mercury, potassium iodide, bismuth, and a host of other drugs in conjunction with arsphenamine? And, since they are all given, what is the specific indication for any one, and what is the limitation?

I am not aware that these questions have been answered satisfactorily, nor perhaps will they be by me, but the very fact that there seems no general information on the subject constitutes my apology for this paper.

First, arsphenamine must be looked upon as our most active antiluetic drug, as manifest by the almost dramatic rapidity of healing in syphilitic lesions following the injection, together with the disappearance of treponemata, and the clearing up of positive serology.

The indication, then, by all deductive reasoning must be this therapy in all syphilitic infections, irrespective of the stage, due emphasis being given contra-indications. These contra-indications are not so broad as one might suspect, as most of the diseases constituting contrary therapy are in reality syphilitic conditions. True there may be positive organic defects that would not warrant any kind of intravenous work but, under ordinary circumstances, they exist not in fact, but in the commercial literature. The most brilliant results, of course, in the administration of salvarsan, or silver salvarsan, is in early primary, or secondary syphilis, by saturating the patient to the point of tolerance before the treponemata have wrought organic changes in the biological medium, and before there has become a generalized involvement of all, or most of the important organs.

In this stage of syphilis, it would seem that arsphenamine alone has cured without the synergistic effects of other drugs, thus exemplifying Ehrlich's earlier ambition; however, we should not assume this hypothesis as entirely correct, and cut short any treatment.

The indications are rather definite but when we should limit our arsenical medication seems not so clear. In other words, when should we assume that a given patient has had the number of "606" injections that will suffice?

In the opinion of the writer it is wholly a question of immunology, a conclusion arrived at from studying types of cases over a period of years, summing up the number of relapses after a definite number of injections, and comparing these groups. I feel this would be burdensome reading, and will omit a detailed report but base my opinion upon the final results.

After about eight injections of "606", the average patient develops a tolerance for arsenic, in other words he becomes arsenic-fast, and with this condition it is apparently useless to give this drug further. Then there should be a rest period from arsenic for some few weeks that the patient may become detolerated, or this resistance be overcome, after which time treatment should again be instituted.

As to the requisite number of series, assuming eight or about this number as a series (as this number ordinarily produces drug-fastness), it would seem that a minimum of three series should be given to obtain the best results, irrespective of clinical or serological findings after each series; a study of less than three series shows the greatest number of relapses after an observation period of two years following the last injection.

In late syphilis, especially complicated by a focus of infection as in neuro-involvement, the number of series must be increased to meet the individual indications.

Just where mercury stands in the therapeusis of syphilis has created much discussion in the past few years, and it is generally agreed that it occupies a very definite position as a synergistic remedy. It has a selective action on protoplasm thus perhaps actually killing the treponemata in their regenerative stage.

As to the point of tolerance of intramuscular mercury, it would seem that after from twelve to fifteen injections there is but a very indefinite therapeutic result, and the kidneys will show some irritation. For physiologic

*Read at the fifty-sixth annual meeting of the Medical Society of Virginia, in Richmond, October 13-16, 1925.

reasons persistence beyond this point is not in accord with good judgment. Therefore, a rest period should intervene to allow for the recovery of the kidneys and other organs, plus the fact that suitable time be allowed for the process of detoleration.

Potassium iodide occupies at present a very enviable place in the treatment of gummatous infiltrations, more especially bone involvement of the head and face. For reasons not explained by me, arsenicals do not have entirely the desired effects in ulcerations of the nasal septum and palate. I have had these structures proceed to perforations under active arsenical treatment, when they would be controlled by the iodides in an amazingly short time.

Assuming that there is an inhibition of the antiferments, allowing the proteolytic ferments to cause lysis and absorption of granulomatous material, this therapy is suggested in all nodular and gummous lesions, which develop more or less constantly in all cases of late syphilis. The time required for this action varies, but it is safe to infer that within about three months the results one might expect have been consummated, and there has developed a resistance to iodides. The patient meantime should be put on some treponemicidal agent.

There is some agitation at present for bismuth compounds which seem to have the most unmistakable place in the treatment of those cases that are resistant to other drugs as the result of tolerance, and those cases that do not take mercury well. There is constantly before the operator the possibility of bismuth intoxication and, if this does not develop, the results after about fifteen injections are but indifferent, demonstrating that resistance to the drug is had rather promptly; consequently, for best results, after this period, other drugs must be resorted to.

The question as to why arsphenamine will not cure in itself has been answered in substance in the above statements; namely, either the patient develops bodies immune to the effects of arsphenamine, or an arsenic-fast type of treponemata is developed. This latter calls for a rest period which allows Nature to break down this resistance (which of course is only a relative term) and in this case the completeness of this process is the ratio between the good and bad results, or there should be a substitution of other well known antiluetic drugs for either their synergistic or treponemal qualities.

Medical Arts Building.

Discussion

Dr. R. B. James, *Danville*:—The trouble about this rapid treatment with arsenic is that you really do not know when to quit giving it. The old method for the acute case, of giving large doses of mercury until the symptoms subsided, and then keeping the patient on mercury for years, was very satisfactory. The only trouble was in getting the patient to do it. In treating a man now you give him this arsenic preparation, as the doctor said, three series of eight each, and if you leave that man alone and do not keep him under treatment for several years, the chances are it will come back. Under these circumstances, I give the iodid of mercury one-fourth grain three times a day, for eighteen months or two years. We furnish the drug, because in that way we have a string on the patient; he will come back, and if he does not we get after him. I have been practicing a long time, and I have never known a case to relapse where the patient religiously adhered to this treatment. We have not used the arsenic treatment long enough to know whether the patient is cured, or not; twenty or thirty years must elapse before we can be sure. Then, why abandon a method of treatment we have found efficacious for so many years? It is treating the patient unfairly to omit such valuable treatment; so I would say use the arsenic by all means, as much as you like, until you hope the patient is well. Then, to make assurance doubly sure, give him small doses of mercury three times a day for two years.

Dr. H. O. Bell, *Salem*:—In regard to Dr. Driscoll's paper on antiluetic treatment, I want to put in a plea for two things in which I am especially interested. They are congenital syphilis and the treatment of syphilitic mothers before the child is born. Dr. Findlay, of Glasgow, has brought out the point that the mother can be treated up to the eighth month of pregnancy and give birth to a perfectly healthy child. He has also brought out the fact that a child can be born with a positive Wassermann and without syphilis. So I want to put forth a plea, from the public health standpoint, that every pregnant woman with a positive Wassermann be given careful and thorough treatment, to the end that we may eliminate from the generations to come that thing which, after it has gotten here, we can not treat with any assured success.

Dr. Driscoll, closing the discussion:—I wish to thank these gentlemen for the discussion. It would have been impossible for me to have covered the treatment of syphilis in the time allotted.

I do not wish to make the impression that I exclude mercury. My idea simply was to bring out the suggestion tbat tolerance is established in the use of these drugs. Nor do I wish to make the impression that three series will necessarily cure. Each case of syphilis is a law unto itself. Surely we cannot do away with mercury. Unquestionably mercury has a very definite synergistic effect, and we must persist in this. In the primary and very early secondary cases of syphilis there is a tendency on the part of the profession to give the minimum amount of arsphenamine and mercury, but that is a mistake. I stated that each and every case, irrespective of serological and clinical findings, should have at least tbree series of mercury, in order to

secure the best results. Usually, in the primary or early secondary stage, we have a negative serology after a short course of mercury or arsenic. These cases should have thorough treatment.

TREATMENT OF PNEUMONIA.*

By B. M. RANDOLPH, M. D., Washington, D. C.
Professor of Clinical Medicine, Medical Department of George Washington University.

In discussing the therapy of acute pulmonary inflammation, it will perhaps be profitable to use the time allotted in giving some personal impressions, rather than to try to give a systematic discussion, such as is found in text-books.

The elder Loomis, is reported to have said, "there are some cases of pneumonia you can't cure; there are some you can't kill; and there are a few in which treatment and nursing will determine the question of death or recovery." Loomis represents the full flower of the prebacterial age of clinicians, and we have only to compare statistics to decide on the progress proceeding from the discovery of the parasitic origin of this disease.

A few years ago we thought we had gotten the last word on etiology in the publication from the Rockefeller Institute of the differentiation of the pneumococcus into Types I, II, III, and IV. Subsequent studies by others have shed no little uncertainty on the classification of all but Type I, and bacteriologists as well as clinicians feel that further study is needed to establish all the facts. Furthermore, the idea that what we have called lobar pneumonia is synonymous with pneumococcus pneumonia, and that streptococcus pneumonias are all secondary infections and diffuse pneumonias, must, in the light of clinical and postmortem findings, be abandoned. Certainly acute primary streptococcus pneumonias do occur, which, from the standpoint of the physical examination, cannot be differentiated from croupous pneumonia. My own opinion is that the entire subject of the pathology of acute pulmonary inflammation badly needs a complete reconsideration from the ground up.

Type I pneumococcus produces in the lung (and elsewhere) an inflammation that appears to have all the characters of a specific infection. It is acute and self-limited. It has a characteristic exudate. It runs a violent course, and, if the patient survives, will terminate abruptly in a given time. The prognosis in young persons and adults with sound hearts, livers and kidneys is good. With advancing years and coincident disease or deterioration, the prognosis becomes more grave. Statistics of treatment which do not take these factors into consideration cannot be judged on their face value.

Specific Therapy

Antipneumococcus serum derived from inoculating horses with Type I pneumococcus was reported from the Rockefeller Institute to have reduced mortality from 25 per cent to 7 per cent. Others have not had such good results. My own experience with a small number of cases indicates that this treatment is immediately followed by a marked reduction of toxic symptoms, fever, dyspnea, cardiac embarrassment, pain and nervous irritability. The duration of the disease and the resolution of the exudate are not affected. We naturally wonder why this method has not taken a stronger hold on the profession. This is undoubtedly because:

a. The required laboratory facilities for the study and control of cases are not available, and probably never will be at hand except in selected clinics; certainly not for patients of the general practitioner as professional work is done today.

b. The danger of treating patients without proper preliminary desensitization is grave.

c. The technique of administration requires exceeding care and no little skill for safety. Too rapid administration can kill a patient.

d. The frequent serum reaction, usually a distressing urticaria, is enough to make it unpopular.

e. When used in all ages and conditions, the results are not what we were led to hope for.

Attempts at specific treatment of other types of pneumococcus infection and of streptococcus infection have not stood the test of critical analysis. It would seem, therefore, that, except for a better understanding of the nature of the infection, we have little at hand for treatment that was not available before we knew anything about bacteriology. The best we can do is to realize that the patient cures himself and by intelligent co-operation with the resources of Nature to help him through.

We can do much by:

1. Proper care of colds. The majority of cases, even the most fulminating ones, have a preliminary stage of malaise and irritation of

*Read in a symposium on Acute Primary Pneumonia before the Medical Society of the District of Columbia, January 27, 1926.

the upper air passages. Early attention on the part of the patient to such conditions will prevent many cases, and improve the prognosis in such as do develop. Protection from fatigue, exposure, dissipation and indiscretion in diet are measures here indicated. A few hours may make an important difference in prognosis.

2. With the onset of the disease, immediate and complete confinement to bed has most to do with a favorable outcome.

3. Begin treatment with a brisk catharsis. Calomel—grains ii with resin of podophyllum —grain ½, in a single dose, accomplishes this satisfactorily.

4. Alkaline medication should be instituted early, and it should be continued throughout the febrile period. I prefer the vegetable salts, the citrates and acetates, sodium citrate being my usual choice. It is pleasant to take; it is very soluble; it does not react with the acid of the gastric juice, as do the bicarbonates, but is absorbed without change; it is converted into carbonate in the body fluids, and has the same systemic effect; it soothes bronchial irritation; it liquefies the pulmonary exudate; it produces a gentle relaxation of the skin and a mild diaphoresis; it reduces the acidity and increases the output of urine; it reduces the hydrogen ion concentration of the blood. Increased hydrogen ion concentration is a part of the pathology of acute pulmonary inflammation. About two drams a day is ordinarily sufficient.

5. *Oxygen Inhalation.* I place this here, not because of its reliability, but because oxygen hunger is one of the grave conditions met with. It is not understood to what extent this hunger is due to inadequate aeration, or how much to the impaired capacity of the blood cells to utilize that supplied from the air. In some cases the administration by inhalation of concentrated oxygen gives conspicuous relief, and in others fails entirely. In persistently cyanosed cases, I think it should be tried.

6. *Topical Applications.* It is the fashion today to sneer at the use of local applications to the chest, but I am of the opinion that in the early stages much benefit is derived from them. Often the trouble is that the disease is not recognized as such until extensive invasion of lung tissue has taken place, such as can be recognized by dulness, bronchial breathing, bronchophony and crepitant rales over an entire lobe. Chill, fever, pain in the chest and respiratory difficuty should be the basis of a presumptive diagnosis of pneumonia, and if active treatment were begun immediately, I believe the percentage of aborted cases would be larger.

Mustard paste is most valuable at the onset. It should be mild, one part mustard to five parts flour for adults, and one to ten for children. It should include the entire chest from armpits to costal margins, and should remain on until it begins to burn. According to the sensitiveness of the individual skin, such a paste will be borne from one to several hours. A brisk hyperemia of the skin without blistering will be seen on its removal. It may be reapplied after the hyperemia has subsided, but this is usually not indicated.

The Wet Compress. This should be applied to the entire chest. It is especially adapted to children of five to twelve years. Exact technique is important. Change and reapply as fast as it gets dry and hot. The interval will be governed by the intensity of the fever. It is sometimes amazing to see the relief that follows of the dyspnea, rapid respiration, pain and nervous symptoms.

Warm Bath. Especially adapted to infants is the full bath at a temperature 90° to 100° F. for five to twenty minutes, the duration and temperature being regulated according to age. It should always be accompanied by friction throughout the bath. Irritability is soothed and the baby sleeps. I have seen cases apparently aborted by this treatment alone.

Drugs

Alkalies have already been discussed. Other drugs that help the patient through are:

Digitalis. There is no question of the efficiency of this drug in carrying the heart through its ordeal. It should be given early and in sufficient quantities as soon as the heart shows the need of it. Some recommend its routine use from the start. I have never been able to convince myself that this principle is the correct one. Certainly many cases get through admirably without digitalis. I do not feel that I know how much to give except by using the heart's performance as a guide. I believe that if we are properly alert, we will see the indications in time to get the full benefit of its use. It must be remembered that collapse of the peripheral circulation

may take place from the effect of the toxins on the vaso-motor system, and that digitalis will not meet this type of circulatory failure. I use a good tincture in a liquid pepsin vehicle, and have yet to meet with any reason for a substitute. If we are called to see an emergency case, where myocardial collapse has been permitted to occur without digitalis, the injection of strophanthin may save a life.

Whiskey. I am one of those who still believe that whiskey saves the lives of some who suffer with pneumonia, as well as with other septic conditions. I do not believe that we know all that there is to be known of the physiological action of ethyl hydroxide, and think that future physiological and pharmacological investigations will justify the empirical practice of earlier generations of physicians. I feel that in addition to its manifest beneficial effect on the peripheral circulation, as shown by the improved quality of the pulse, it is, in the presence of acute infections, the best and safest nerve sedative and sleep producer we have. Of course, the majority of cases require little or none, but elderly patients and those who are habituated to the use of alcohol (and there are still such) have their prognosis decided by its use.

Coal Tar Antipyretics are, in my opinion, contraindicated. If pain requires an anodyne, codeine is safest, but, with the proper use of topical applications, little anodyne is needed in most cases.

Strychnine I do *not* use except in convalescence, especially of the aged. The common practice of giving full doses of strychnine half dozen times a day, day after day, is to be condemned. Such medication produces nervous irritability and insomnia which are most injurious.

Caffein I rarely use, because I have been disappointed in its effect as a medullary stimulant. Possibly I do not know how to use it. Prolonged and repeated use offers the same objection as does strychnine of increasing wakefulness and nervous irritability.

Camphor. I have seen apparently excellent and prompt results from the injection of camphor in oil in cases with vaso-motor collapse, but I am certain that the claims made for it by some are exaggerated.

Diet

The most important element is an adequate amount of *water.* Some patients are thirsty, while others do not seem to crave water. The latter must be given enough to keep up a good urinary flow.

Food. Some nourishment is, of course, necessary, but a patient is not likely to starve in a nine day illness, and the ravages of low diet will be speedily repaired by the convalescent appetite. With asthenic patients, and those in whom the course of the disease is more prolonged, daily attention should be given to the food intake. Adapting the diet to the habits and digestive capacity is the practice which I have found most satisfactory.

Convalescence

In Type I pneumococcus cases, after the crisis, the convalescence is rapid, and return to activity can be regulated by the condition of the heart. Streptococcus and mixed type cases must be guarded much more carefully, as they are prone to relapse and extension of the lung involvement. They should be kept absolutely at rest in bed until the temperature has been normal for forty-eight hours, and thereafter activity should be very gradually increased. I regard this a very cardinal feature of the management.

Hygiene. There should be plenty of ventilation and light in the sick room. An atmosphere of 60° F. is advantageous to robust adults with Type I pneumonia, provided they are protected against direct draught. Infants and elderly persons require a warmer temperature. Streptococcus cases are more subject to sweats and relaxation of the peripheral circulation, and chilling should be prevented.

Light, unless shining directly in the patient's eyes, causes no harm or inconvenience. I am against the darkened sick room in all but eye cases; things escape notice that need to be seen.

A sponge bath twice daily makes the patient comfortable, has a favorable effect on the vaso-motor system, and promotes sleep.

The patient should be prevented from making any effort for any purpose. Everything should be done for him. I frequently forego needed X-ray and physical examinations in order not to tax the heart.

Prophylaxis

This is based on the hypothesis that the exudate from the respiratory passages contains the infecting agent. Visitors should, of course, be excluded for the patient's sake as well as

for their own. Other patients in a hospital ward can be effectively protected by proper screening. Attendants must be particular about washing their hands after rendering service. Food utensils should be scalded. Bed linen should be boiled before returning to common supply. Bedding should be disinfected on the completion of the case.

Summary

1. Early diagnosis and the prompt institution of treatment is fundamental.

2. Treatment must be adapted to the individual patient. What will help one may hurt another.

3. If we are to get proper results from therapeutic procedures, we must see that they are properly applied. A chest compress improperly applied is much worse than no compress. This applies to nearly every measure used. If you wish a thing done right, it is best to see to it yourself.

4. Streptococcus infections have a very different course from Type I pneumococcus infections, and their management as well as their prognosis is essentially different.

5. From the standpoint both of therapy and prognosis, the effort should be made to ascertain the bacterial origin of every case of pulmonary inflammation.

2010 *R Street. N. W.*

TREATMENT OF HEMORRHOIDS BY INJECTION.*

By E. H. TERRELL, M. D., Richmond, Va.

The radical operation for hemorrhoids, until a few years ago, was the only recognized method. Every other means seems to have had associated with it a certain degree of quackery, and, largely for this reason, was vigorously condemned by every ethical physician. Especially was this so in regard to the injection of hemorrhoids. This, even today, is considered by some to be a dangerous and unscientific procedure, but every observer must acknowledge, however, that it is gradually gaining friends. It seems that former prejudices against it are being dispelled as men of undoubted character and professional standing, here and there, announce their satisfaction from the use of one of the drugs ordinarily employed.

The most reliable data seems to show that the injection of hemorrhoids originated with one named Mitchell, of Illinois, about the year 1871. For a long time the formula used was not given except for a consideration, which carried with it the right of use only in certain restricted areas. It is said that those attempting the treatment were untrained and knew little or nothing of rectal pathology. Under such circumstances, there is no wonder that the method soon fell into disrepute. The condemnation it received was perfectly justifiable, but the fault lay with the men who attempted to use it rather than with the method itself. The fact that it has survived at all under such conditions is truly remarkable, and is good evidence that there is something of value in it.

The treatment originally consisted in the injection of a solution of carbolic acid. This, used in various strengths and often in combination with other drugs, is still very popular with many proctologists both in this country and abroad. Notable among the very strong advocates of the carbolic acid treatment is Arthur S. Morley, of London. He recently has published a book on hemorrhoids, the greater portion of which is taken up in a discussion of the treatment by means of this drug. He recommends a solution of approximately 20 per cent. Some others prefer a much stronger one. The results obtained from its use in properly selected cases are undoubtedly good, but, judging from the reports seen, complications, particularly prolapse, strangulation and bleeding, are more frequent than should be. I have had no experience with carbolic acid in the treatment of hemorrhoids, and cannot speak authoritatively for or against it.

Any efficient treatment which is truly ambulatory, in the strict sense which the word implies, appeals to most sufferers from hemorrhoids. In my opinion, every proctologist should be equipped and prepared to treat suitable cases by some one of the ambulatory methods, of which there are several. Patients are traveling long distances every day for the treatment of hemorrhoids, because, in their home town, surgery is the only means of cure offered them. A hemorrhoid operation is generally feared much more than one for appendicitis or, in fact, any other involving the abdomen. The reason for this is due to the experience of those who fall into the hands

*Read before the American Protologic Society, at Atlantic City, N. J., May, 1925.

of inexperienced operators. They delight in telling their friends of the torture through which they passed. Often it is not much exaggerated, and so it becomes spread around that the operation should be avoided whenever it is possible to do so. The fact is, as every member of this society knows, a properly performed hemorrhoidectomy ordinarily is followed by little or no pain. The converse is also true, that when there is much post-operation pain it has been improperly done.

Regardless of the surgeon's choice in the matter, the patient's wishes must receive some consideration. If he can be cured by a safe means without an operation, is there any reason why it should be denied him? Of course, not all hemorrhoids can be cured without operation. In my experience, only about 50 per cent of those seen are suited to the non-operative method. The others demand surgical intervention if a satisfactory result is to be obtained. It is in the selection of cases, or rather the selection of treatment best suited to the individual case, where the experience of the surgeon counts for most. I have known many instances where both thrombotic and inflamed external hemorrhoids were injected. While no permanent damage may have been done, the symptoms were made manifestly worse for a time, at least. These physicians know nothing about the diagnosis of rectal conditions and none of the principles involved in their treatment. This same statement will apply to many surgeons who operate when the opportunity presents itself. I do not wish to convey the idea that rectal surgery is more difficult than any other branch, or that only the specialist should do rectal surgery. I know of many general surgeons who do excellent work in this region, and many others who do not for the reason that they have made no study of rectal pathology. I am simply making a plea that he who treats rectal diseases, whether by some so-called ambulatory method or by surgical means, should study the subject seriously from every standpoint, until thoroughly understood. Contrary to the general opinion, there will be found principles involved of the greatest interest, and time spent in their study will not be wasted.

The injection of hemorrhoids seems so simple and it is, when one has a thorough knowledge of rectal diseases, but there are many pitfalls for the one who attempts it without that knowledge. Even in the most expert hands minor complications will occur occasionally, as in all work connected with medicine or surgery. There are so many possibilities for error in injecting hemorrhoids that I can scarcely imagine how an inexperienced operator could carry the treatments through to completion without trouble of some kind. My advice always has been not to use the method until the rectum and its various pathological conditions are quite thoroughly understood.

An injection treatment for hemorrhoids should be considered entirely satisfactory only when it meets certain necessary requirements. In the first place, there must be little or no pain during or following its administration. Secondly, if the claim is made that the treatment is ambulatory, it must conform strictly to the meaning of the term and the patient be able to attend to his social and business duties throughout the whole course. Again, and most important, it must produce not only a symptomatic cure, but a more or less permanent one, and the parts left in a healthy and properly functioning state.

For the past twelve years I have been using quinine and urea hydrochloride in the treatment of selected cases of internal hemorrhoids and have found that it meets these requirements in every respect. I use it in 5 per cent solution and only in the simple uncomplicated variety. This refers to that rather large class of hemorrhoids which bleed or protrude, but can be replaced easily. Its use is contra-indicated when there is inflammation or strangulation. Also, I advise against its use when the sphincters are markedly contracted and spasmodic, for this is indicative of infection. Of course, it would be useless to treat hemorrhoids by injection when there is a complication, such as fissure, fistula or any other condition which requires surgical intervention. If an operation is to be done for the complication, the hemorrhoids should be removed at this time. Only by selecting cases suitable for treatment by injection can one hope to obtain anything like satisfactory results. No ambulatory treatment whatever can be used successfully in all cases, although some of the advertising cult try to make the impression that it can. That it is so is believed by no one of experience and who knows rectal pathology. An efficient remedy is often

brought into disrepute from its use when contra-indicated.

The physician must decide at his first examination whether or not the patient can be cured by office treatment. If he can, he should be given the benefit of the much simpler and more economical method. If, in his opinion, however, the results will not be 100 per cent satisfactory, he has only to say so. It is seldom that the patient will not be guided by the physician's advice when it is plainly stated what is necessary to be done.

Often times, a radical operation may be avoided, when the complication, previously mentioned, is of such a nature that it can be removed in the office under local anesthesia, after which the hemorrhoids are injected. Good judgment is required here also, for one must be able to foretell rather accurately how much reaction is to be expected from such an operation. My experience has been that it is best not to attempt too much in the office.

For the administration of this treatment, I prefer to have the patient placed in the exaggerated left lateral position. Other operators prefer the right side, but it makes little or no difference. Under no circumstance should a prolapsed hemorrhoid be injected. I use a medium size Brinkerhoff anal speculum to bring the hemorrhoid into view. With this instrument, a good longitudinal view of the canal is obtained, permitting an accurate placing of the solution where desired. After the hemorrhoid to be injected drops into the slot, the slide is pushed slightly against the tumor which steadies it. I ordinarily use a one c.c. Luer syringe with a number 25 needle. This is inserted close to the base of the pile and carried as near as possible to its center. Just enough of a 5 per cent solution of quinine and urea is injected to moderately distend the tumor. This will take from one-fourth to one c.c. of the solution, depending upon its size. Usually at the first treatment I use a smaller quantity of the solution than I frequently do later. There is no objection to treating two or more hemorrhoids at one sitting, provided there is no marked spasm of the sphincters. The treatment should be repeated every three or four days until all the tumors have completely disappeared. This ordinarily will take six or eight treatments, but sometimes more. Frequently a symptomatic relief is obtained after one or two injections, but treatment should be continued until all tumors have disappeared entirely. Reports that the injection method of treating hemorrhoids is followed by many recurrences is due, in my opinion, often to insufficient treatment.

The introduction of a solution of quinine and urea into a hemorrhoid is usually painless. There is, however, frequently an uncomfortable sense of weight and pressure in the parts beginning in about a half hour and lasting for approximately the same length of time. This discomfort I have found to be due largely to the strong acidity of the solution. If to each c.c. of the quinine and urea is added two drops of an 8 per cent solution of bicarbonate of soda, which is a saturated solution, before injecting, the objectionable reaction is scarcely noticeable. When more than this proportion of soda is added a white precipitate occurs, which, of course, renders it unfit for use. Apparently a lessening of the acidity of the solution by the addition of a proper amount of soda does not influence the efficiency of the remedy.

I have used quinine and urea in the treatment of internal hemorrhoids since the early part of 1913. During this time, I have treated somewhat over 3000 cases with this remedy and the results have been uniformly good. As previously stated, satisfactory results can be gotten only by carefully selecting cases for treatment. If one bears in mind that internal hemorrhoids are primarily varicosed veins, containing fluid blood, and that quinine and urea will eradicate these and only these, then there should be no disappointment from its use. More than this should not be expected of the remedy. In this series of cases naturally there have been some failures to secure satisfactory results, but they have been comparatively few. Usually this has been due to poor judgment on my part in using the remedy in unsuitable cases or in the presence of after-discovered complications which should have precluded its use.

Complications, the result of treatment, have not been many and, altogether fewer than I have had during the same length of time on a considerably smaller number of hospital patients on whom hemorrhoids were excised.

In this series there have been no deaths, nor has there been a single case to cause anxiety except probably a half dozen who have fainted in the office after treatment. This cannot in

any way be attributed to the effects of the drug, but is probably physic, for this state as often follows the use of novocain in minor surgical procedures.

I have had no cases of hemorrhage as a result of treatment, although one surgeon in a distant city reports to me one alarming hemorrhage due to sloughing into a blood vessel. Sloughing is a rare complication, which I have seen only a few times. It is due either to the use of too large a quantity of the solution or to infiltrating the covering of the pile, which should not be done.

There have been a small number of prolapses with strangulation following the treatment. Unless the tumors are replaced soon, they follow the same course as ordinary strangulated internal hemorrhoids and cause worry to both patient and surgeon. This, fortunately, is a rare complication from the use of quinine and urea. My impression is that it occurs much oftener after the use of carbolic acid.

Working in a field more or less constantly contaminated as the rectum, one naturally would expect many infections. As a matter of fact, this seldom occurs as a result of injecting hemorrhoids. In this whole series there has not been a deep seated or serious infection. I have had two marginal abscesses to form during the course of treatment. These required incision and drainage and were attributed to infection from treatment. In the early years of this work, the most frequent and annoying complication was a swelling and edema in the covering of the canal or of the skin at the anal margin. This occurred occasionally and would cause the patient considerable discomfort for several days. In later years, I have eliminated this complication almost entirely by using greater care in inserting the needle always well above the ano-rectal line, so that there can be no extravasation of the fluid beneath the covering of the canal.

In using quinine and urea in the treatment of hemorrhoids, as well as for other purposes, it should be borne in mind that there are a few individuals who have an idiosyncrasy to quinine. During my experience I have seen only six of these in the 3000 cases treated. This is one in each 500 cases, or one-fifth of one per cent. While it is true that the percentage of people with this susceptibility is very small, when one is encountered, it may cause no little embarrassment for a short time. The amount of quinine received at any single treatment is so small that rarely will there occur more than a transitory reaction. In the cases seen by me, only one gave symptoms other than a tingling of the skin with some itching. This one man, before the treatment was completed, asked if I had not given him quinine. Almost immediately he was taken with nausea and vomiting. This was followed by a rather severe attack of asthma which lasted for two or three hours. It is useless to state that whenever the slightest susceptibility was shown, the treatment was not repeated.

Conclusions

After using quinine and urea for the past twelve years I am convinced that it is a safe, efficient and reliable agent in the treatment of simple uncomplicated hemorrhoids. The remedy has its limitations and satisfactory results will be gotten only when the surgeon is able to select cases suitable to its use. When properly selected and a faultness technic is employed, cures approximating 100 per cent will be obtained.

Medical Arts Building.

MEDICO-LEGAL ASPECTS OF MORBID IMPULSES.*

By ALFRED GORDON, M. D., Philadelphia, Pa.

The problem of the determination of the degree of culpability of a person who has committed an antisocial act is sometimes associated with great difficulties. A variety of factors may enter into the solution of this problem. An illegal act may be committed accidentally or unexpectedly and independently of the person's will. It may be committed under an unavoidable necessity, such as in cases of protection of one's self or one's family. It may be committed under the influence of extreme passion or anger, when consciousness becomes blurred and cerebral inhibition is obliterated. It may be committed by insane persons whose delusional ideas, accompanied or not by hallucinatory images, develop morbid impulses of deliberate and well planned criminal tendencies. Finally, illegal acts may be committed by those who, though not insane in the strict sense of the word, are nevertheless different from normal persons by their power of reasoning, by their sentiments, tastes, sympathies, etc. To this

*Read before the Medico-Legal Society at its October meeting.

class belong the large category of psychopathic individuals, also the mental defectives.

We will be concerned here exclusively with the medico-legal aspect of morbid impulses in psychopathic persons and in mental defectives, with the object of determining the degree of their responsibility. In such cases there is a genuine medico-legal problem to be solved, while lunacy, by the nature of the profound mental disorder, excludes all possibility of discussion. Let us consider the cause of the existence and the development of impulses in the first category of our group.

The study of morbid impulses in psychopathic persons is very important because of the grave consequences to which they may lead from the social viewpoint, and because they constitute episodic manifestations in the life of such individuals.

What is psychopathy? Under this term is understood a pathological state of an individual whose psychophysical resistance is constitutionally diminished; in other words, it is a condition which is a deviation from the normal type of humanity. In such a person there is an interruption of harmonious equilibrium existing between various functions of cerebrospinal centres; the co-operation and adaption of these centres are incomplete. There is an ataxia of thought, of sentiment, of will, of psychomotor functions.

According to the parts involved, these patients form several groups which are only apparently different from each other, but under which is hidden the same individuality, viz., the psychopath.

The most important characteristic features in psychopathic persons are found in their psychical sphere. The development of their intellectual faculties is irregular and there is a want of equilibrium in these faculties. Such patients are only partial, incomplete beings. They may have a remarkable memory but they cannot fix their attention. Their mental instability is sometimes extreme. At the same time they may be eccentric, dreamers, with romantic tendencies. They are emotional, timid, extremely sensitive, impressionable, suspicious, egotistical, haughty, and may be affected with moral perversity of the gravest nature. The best illustration of the loss of psychical equilibrium is found in obsessions and morbid impulses. The latter is the consequence of the first.

What is an obsession? Normally, an idea, a sentence, an image, may unexpectedly invade our mind and obstinately persist. It is sufficient, then, to exercise our will to a certain extent and make this phenomenon disappear. This, so to speak, physiological obsession, never leads to a morbid impulse. When a morbid obsession occurs, the cerebral centres are invaded by a certain image or idea, which remains fixed, and suppresses subsequently all antagonistic images or ideas. This is accomplished not without a struggle, but the tenacious idea is accompanied by a moral pain so intense that it subordinates the will, and the individual, perfectly conscious of what is going on, but powerless, finds himself irresistibly forced towards acts of which he himself disapproves. The obsession leads to an impulse, and these two phenomena are in the same relationship as a thought to the act.

The characteristic features of an obsession are, therefore—A, lucidity as to the phenomenon; B, energetic struggle against the invaded thought, and C, moral torture. The elements of morbid impulses are—A, sudden function of a centre or of a group of isolated centres without participation of reason or of the conscious ego; B, momentary impotence of the will controlling the act.

In a psychopath who becomes fatigued, whose nervous system becomes exhausted, there may develop obsessions and morbid impulses. Depressive emotions, prolonged intellectual effort, a prolonged waking state, excesses of any sort, abundant hemorrhages, protracted infectious diseases, disturbances of nutrition, intoxications, especially alcoholic, the sight of a capital punishment, the news of a suicide or homicide, the recital of a murder, are all provoking causes of morbid impulses in a psychopathic individual.

A young woman of thirty-five who was profoundly psychopathic, whose heredity was the most unfavorable, developed morbid impulses. Being a butcher's wife, she assisted him in carving meat in the shop. On several occasions while handling the large knife she felt a desire to cut off the customer's head. She realized her condition, she struggled with herself, resisting the torturing temptation. Finally, once, in the presence of several customers, she began to scream; the knife fell out of her hands; trembling she begged them to remove the knife from her sight, as otherwise she would commit murder.

A young pharmacist, who has been under

my care for the last two years, has frequently the almost irresistible desire to commit suicide. He is fully conscious of his condition. fights it often at the expense of his sleep. Once, riding on a boat, he felt the necessity of jumping overboard. Fearing for himself he begged the passengers to tie him to a post and keep him in this position until the boat landed.

Obsessions and irresistible impulses may affect also crimes of a less important order. In kleptomania there is an irresistible impulse to possess objects which are of no value. This is frequently done by those who are otherwise perfectly honorable, who possess sufficient means. Here, again, they are perfectly conscious of the criminality of the act, and of the consequence to which it may lead. They struggle against this tendency, they suffer morally, but they finally succumb to the irresistible impulse. Arson, assaults, rape, all varieties of sexual perversion may be committed by a psychopathic individual under the influence of an obsession.

What is the outlook in obsessions with irresistible impulses? The evolution of these symptoms presents nothing typical. It may be periodical and intermittent. Sometimes it appears for a short period and disappears completely. In other cases, it is slow, remains stationary for months and years. In still another series of cases the symptom disappears, but recurs from the least cause.

Obsessions are episodic symptoms in the life of a degenerate. They are incorporated in the mental state of the individual, and never become separated from him. Appearing now and then during his life, they never undergo modifications; they are always the same.

In making a diagnosis in patients of this order, it should always be borne in mind that morbid impulses for minor offenses are frequent in the psychopahtic individuals.

In determining the nature of and the motive for morbid impulses, only a prolonged and thorough examination will help to form an impartial opinion. Let us briefly emphasize the distinctive points as they are essential for a proper conception of these interesting phenomena.

When a lunatic assassinates, he is under the control of a delusional conception and hallucination or illusion, by which he is carried away towards the abnormal impulse. The latter has a special character, viz., unconsciousness of the act; automatism is the essential feature.

When a morbid impulse is the result of an obsession in a psychopathic individual. the characteristic features of the act are—the lucidity of consciousness, the tormenting mental struggle before the act is accomplished. the realization of the horror of the act. At the same time the state of anxiety of the patient is accompanied by cardiac palpitation, acceleration of the pulse, headache, tremor, perspiration, etc. All those symptoms occur in an individual whose mentality is abnormal, irregular, asymmetrical and without equilibrium. In such a person also the soma will frequently be found deviated from normal; there will be present many stigmata of physical degeneration, disturbed functions of the viscera, of tissues, of organs. A profound study of his own life, of his reactions to external and internal stimuli, of his adaptability to surroundings, also of his family history, of the hereditary features—such a study is indispensable in making a diagnosis.

Psychic Factors of Mental Defectives.

Let us now consider briefly the psychic forces in mental defectives which may lead to obsessions or morbid impulsive acts.

In considering all varieties of mental deficiency we find a long scale beginning with mental monstrosities and ending with slight mental feebleness. When the intellectual powers are involved in their entirety, we deal with idiocy. When the arrest of mental development is only incomplete and is, therefore, compatible with the existence of some intellectual manifestations, we deal with imbecility. There are also those in whom only certain powers are likely to reach a degree of development; in whom there is no general, but only partial defect of intellectual powers. For example, one will show a meager power of intellectual acquisition; in another, the power of judgment is defective; another is incapable of acquiring elementary mathematical knowledge, or a knowledge of the natural sciences; in another, the power of attention remains very elementary; others show a marked poverty in the power of reasoning, of generalizing, of abstracting, of memorizing, of associating ideas. This category of individuals manifests a conspicuous inequality of development of various intellectual powers.

From the viewpoint of mental responsibility before the law, it would be superfluous to dwell at length on the idiots. The complete absence of intelligence, of moral conceptions

of sensibility, places an insurmountable obstacle between idiots and the exterior world. Education has no hold on them; impressions leave no trace in them. Instinct alone guides their actions and their relation to others. Their life is reduced to an automatic execution of vegetative function.

In imbecility we find rudiments of intellectual and moral development. The intellectual niveau is somewhat higher than in idiots which, therefore, permits certain acquisitions. With considerable amount of patience, perseverance and ingenuity one may succeed in training imbeciles in certain moral principles. In spite of all efforts one can expect but a certain degree of mental development in an imbecile. His language remains poor as to the number of words; his articulation is defective; his expression indicates poverty of thought, the character of his acts corresponds to his manner of thinking. In the sphere of morality he exhibits instinctive tendencies of a low order. Cruelty, vanity, gluttony, masturbation, sexual perversion, excesses of all kinds, cowardice, unusual irritability, are all characteristic of imbeciles, and these characteristics lead frequently to all sorts of abnormal acts. Theft, arson, brutality, homicide, are not uncommon in imbeciles.

Following up the intellectual niveau one step higher than in the imbecile, we enter the domain of the large group of mental feebleness, the study of which is of considerably higher importance from sociological and legal viewpoints than that of idiocy and imbecility. Here we meet with a great many varieties and subvarieties, and the transition of one into the other is imperceptible. This is the most important chapter in the study of mental deficiency, as the number of such individuals is legion. We find them with us frequently; we deal with them in innumerable transactions; we find them on school benches, as well as in business life. Their relation to the community frequently results in harm.

This group presents, speaking generally, a mentality inferior to the normal in quantity and quality. Their intellectual development is both delayed and reduced. The slowness of mental evolution and its lesser amplitude are characteristic. Thus, for example, the intelligence of a boy of twelve resembles that of a child of five.

In view of the enormous influence of intelligence upon the shaping of the normal personality, the resulting moral debility is to be expected in the category of persons which is the subject of the present study. It is a common observation that, apart from idiocy and imbecility, one of the chief characteristics of the feeble-minded is an obtuseness of conscience. The elements of the latter are too feeble in the struggle against passions. It may happen that the mentally deficient has some conception of right or wrong; he may feel that he does wrong, but he does not possess the aversion which would be characteristic of a normal person. The moral censors are not powerful enough; the voice of duty is not loud enough to be overcome by impulse. The cause of this disorder lies in the incomplete development of moral ideas. The want of judgment, of will, the weakness of character, render the moral personality of the feeble-minded unstable, not resistant, and thus they become an easy prey of their passions.

The majority of the symptoms referable to the deviations in the moral sphere gravitate around the ego of the mentally deficient. Thus, the ego becomes extravagantly accentuated. Egotism, consequently, is one of the most conspicuous symptoms of the entire picture. The mentally deficient individuals have no other thought but of themselves. Nothing moves them; nothing disturbs them except their own disturbances which they immeasurably amplify. Such a psychic orientation naturally leads to a dominating attitude and intolerance. Envy or jealousy is another derivation of egotism.

Among other typical features of mentally deficient individuals may be mentioned impulsive phenomena. They are spontaneous and involuntary psychic manifestations. Normally our acts are controlled by two factors—desire or an impulse for action on the one hand, and reasoning on the other. The latter controls and inhibits the former. When the intellect is impaired or defective, the impulse predominates and the desired act is executed, no matter how deleterious it may be; in such cases, we observe frequently sudden impulsive acts in which neither reasoning nor will power intervene. In some cases the mentally deficient may yet at first attempt to reflect upon his premeditated act; he may yet appreciate the immorality and criminality of an illegal act, but the appreciation and meditation are not profound enough to overcome the instinctive tendency, and the person succumbs to the latter.

Morbid impulses may be manifest not only in criminal acts of a gross nature, but also in minor acts. The tendency to excesses is commonly observed in these cases.

We have seen that the two important elements of the personality, namely, the intellectual and emotional, do no more preserve the parallelism of the normal individual. The intelligence being feeble, it has no more inhibiting power over the moral personality. Struggle against passions does not exist, or exists in a small degree. Impulsive acts are characteristic. The mentally deficient possess either an emotivity with exaltation, in which great impulsiveness, sudden anger, extreme anger, violence and brutality are conspicuous, or else emotivity with depression, in which they exhibit extreme timidity, extreme shyness or a tendency to solitude, so that the resemblance to the attitude of a savage is in some cases striking. In some cases these two conditions may alternate. It is evident that the impulsive acts of the mentally deficient individuals are the expression of lack of control of ideas over passions. As the cerebral centres are the source of ideas and of their associations, we observe them here in a state of collapse; they appear to be withdrawn from the chain of genesis of ideas and of their manner of manifestations.

Pinel succeeded in convincing human minds that insanity was a disease and that there was no crime if the criminal was insane while committing it. Gradually the field of responsibility became wider and wider. The criminologists of the new anthropological school, and with them the psychiatrists and all students of normal and abnormal psychology, jurists and enlightened laymen, all admit now that a psychopath, as defined above, presenting episodic paroxysms of pathological impulses cannot be considered fully responsible for his criminal tendencies and acts, and that, instead of being committed to prison, he should be removed from society and placed safely to undergo medical treatment.

As to mental deficiency, we have seen on the foregoing pages that besides a certain degree of intellectual inferiority, there is particularly an inherent deficiency of inhibitory power. We have seen that the whole life of mental defectives is composed of incidents of an instinctive nature, as the instinct predominates in them, and, therefore, their actions are invariably the result of mental activities. The impulses are no more under control of the cerebral centres which ordinarily regulate our actions; but they exercise their influence on the motor sphere by producing an excessive activity. In such cases naturally there can be no choice of action; each movement is the immediate result of sentiment. The acts are unconscious; they must be executed because they are out of the field of struggle which normally exists between reasoning and passion. The acts are, therefore, mechanical, automatic, and of a reflex nature.

Medico-Legal Considerations.

The question of responsibility of persons presenting morbid impulses is of the greatest moment from a social and medico-legal point of view. It is frequently accompanied by difficulties, and has led not infrequently to many judiciary errors.

Primitive society recognized crime as a punishable act, irrespective of any other consideration. The criminal was always punished, no matter what his mental state was. Ancient legislation ignored entirely the question of irresponsibility. The Romans were the first who distinguished between compos and non-compos mentis. But the great difficulty was to determine under what condition an individual ceases to be compos mentis. Prejudices, errors of all sorts, religious and political passions interfere with the proper understanding of cerebral functions, of impulses. These persons may be fully aware of the illegality of a certain act; they may fully realize that murder, assault, arson, deception, which they commit, are normally wrong and punishable by law, and yet they cannot, by reason of the very nature of their mental inferiority, be held totally accountable for their actions.

The medico-legal literature is abundant with examples of indiscriminate conviction of this category of persons. Notwithstanding the considerable work of the psychiatrists, and the incessant labor of the profound students of psychology and of the evident and flagrant injustice to mankind, some jurists are loath to accept the humane and scientific principles laid down by the workers in this field of human knowledge. It is, of course, proper to advise, as they do, to moderate the passions and to learn to control them, but this is possible only for a brain free from any hereditary or acquired taint.

The degenerates with morbid impulses are,

therefore, irresponsible; but what is the degree of their responsibility between the acts, viz., during the lucid intervals? Here jurists, alienists, anthropologists are not exactly of the same opinion.

The old-classical school of criminology believes in so-called partial responsibility. They say that because an abnormal brain although not insane, has an abnormal will, an abnormal conception of right and wrong, the law should impose only partial punishment. The modern psychiatric views, the glory of which belongs mostly to the French school and especially to Magnan and his pupils, are based upon a different conception of degeneracy and criminology. Lombroso, Ferri, Garofalo in Italy, and Broca, Manouvrier, Lacassagne in France, have laid the foundation for the modern anthropological school. According to the anthropologists, the criminal is under two kinds of influence: Intrinsic, or individual, and extrinsic, or social. This double responsibility in a psychopathic individual is nil, and his responsibility is absolute at all periods of his life; its excuse lies in the heredity and in the morbid impulses which are not present in normal beings.

When an expert is called upon to give his scientific opinion on crime committed under the influence of an irresistible impulse, he has to consider not only the crime but also, and mainly, the criminal. As to the criminal, it must be determined whether he is insane or only a psychopathic or mentally defective individual affected with obsessions and morbid impulses.

When the crime is committed without a motive, while it is accompanied by a perfect integrity of conscience, and preceded by a mental struggle, there is no doubt that it was the result of a morbid obsession. In insanity the expert will sometimes encounter difficulties. In the first stages of a mental affection, in which a perverted mode of thinking, feeling, and acting is not easily recognizable; in epilepsy, when between the attacks the individual is comparatively lucid; in some cases of paranoia, when the patient will skilfully conceal the subject of his delusion—in such cases the expert will have to surround himself with all possible precautions, obtain detailed personal and family histories, interrogate the criminal at various times before he decides the question of insanity, viz., responsibility. The role of the expert in these conditions must consist not only of giving a personal impression more or less justified by his own experience, but also of presenting evidence which will be understood by laymen.

The determination of the degree of responsibility of a criminal should, therefore, be placed in the hands of an alienist. Only he is capable to determine early stages of insanity; only he is able to determine apart from insanity the degree of mental control, of inhibitory power of a delinquent who presents mental stigmata of degeneracy.

There is a frequent conflict between medical and legal conceptions of insanity. The law admits that a man with one fixed delusion may be sane on every subject except when he touches upon the delusive thought, and some jurists consequently argue that he can be considered sane before or after a crime is committed, but insane during the act. From a medical viewpoint, such an argument is unscientific, for, if delusive ideas are apt to originate in a brain, the function of its constituent elements is certainly disturbed. In such a brain one certain delusion may be formed and remain fixed, but by the very reason of this fact this brain must be considered diseased and misconceptions with misinterpretations may become manifested at any moment. A person thus affected should by no means be considered "responsible before the law" before or after the crime.

When an individual conscience is not completely developed; when judgment and will power are wanting; when egotism is pathological; when envy and hatred are intense and directed towards the dearest and nearest; when impulsive tendencies are conspicuous; when a thorough appreciation of acts and meditation are intrinsically not profound enough to overcome instinctive tendencies; when all these phenomena characterize mentally deficient persons, phenomena which constitute an integral part of their abnormal make-up, the problem of mental responsibility may be solved without special difficulty. It requires no special stretch of imagination to see that those mentally inferior, such as depicted above, possess inferior and defective conceptions of right and wrong. The discrimination between the two is naturally faulty. They may recognize the illegality of an act, viz., that punishment by law may follow, but the fundamental and social value of a lawless act is not altogether accessible to their abnormal or defective intel-

lectual and abnormal personality. It is, therefore, evident that their responsibility can by no means be total; it must be limited. The established legal test of right and wrong cannot be applied to those cases.

Those who create laws and those who administer justice view with very few exceptions only the social side of the law, and usually are not at all interested in psychological and medical studies which present a different concept of criminality and of the criminal himself. It is true that penal legislation and legal medicine are distinct and separate sciences, but positive criminology must rely on both branches of human knowledge. An intimate unity of these two sciences is an indispensable and an essential condition of progress. Criminology has for its object the formation of positive laws concerning crimes and the discovery of remedies for them. With this object in view, it searches the truth wherever it can be found, and takes from medical and legal sciences data which it needs to form a scientific foundation. By the union of the two sciences the old and too narrow boundaries of human conceptions of liberty and responsibility will be broken and progress will be assured. Our present knowledge of normal and pathological processes in the psychic sphere and the proper appreciation of abnormal mental operations enable us to avoid errors in administering justice. To accomplish the latter, responsibility and irresponsibility must be viewed from the viewpoint of broader principles than heretofore. Human liberty and responsibility are two most serious elements of life that cannot be dealt with in a purely technical manner. In studying a crime we must distinguish two factors, viz., the conditions in which it was committed and the psychic characteristics of the author of the crime.

I will conclude with the following propositions:

The legal conception of responsibility is not in accordance with the principles of science, and does not satisfy the practical exigencies of life. An alienist should be called upon to examine such a criminal. Administration of justice in such cases should be confided to a jurist and to an alienist.

Administration of houses of correction should be placed in the hands of alienists and pedagogues.

Youthful criminals should be placed, not in prisons, but in special institutions where they shall receive medical attention.

Conviction of criminals intellectually and morally defective is unjust and should be replaced by prophylactic measures which form a part of social hygiene.

1812 *Spruce Street.*

EXPERIENCE WITH NON-SURGICAL DRAINAGE OF THE BILE TRACT BY THE LYON METHOD.*

By ALEXANDER G. BROWN, Jr., M. D., Richmond, Va.
Stuart Circle Hospital.

Who does not grant that cases of chronic catarrhal gastritis, with the retention of its hyper-acid contents and catarrhal secretion, are benefited by the use of gastric lavage and irrigation? Is it not an accepted clinical method in the presence of retained pus, to "wash-out" the cavity or organ involved? Does not the experience of surgeons and physicians coincide in noting the benefit of drainage and irrigation? Is not urinary bladder irrigation, gall-bladder drainage, stomach lavage, and colonic irrigation, each, considered a good therapeutic procedure in the presence of inflammation with retained catarrhal or purulent matter? So, may we not say that the irrigation and washing of an inflamed duodenum, into which, during the period of gastric evacuation of food chyme, bile and pancreatic juice has been poured, is of benefit in freeing it of excess catarrhal stuff, in this way favoring the action of bile and pancreatic secretion on the food?

But the method does more than this. Magnesium sulphate solution reflexly releases the bile flow and causes the gall-bladder, with its highly concentrated bile products, to evacuate itself. This action comes about, it is said, by the relaxation of the sphincter of Oddi. In this process, the gall tract—common, hepatic and cystic ducts and gall-bladder—receives an irrigation. This stimulates and restores the bile tract mucosa to improved function. It carries away accumulated abnormal bile and pollutions. It increases the physiologic properties of bile by removing the mucus and the thick bile. In this way, the duodenum, the bile tract and the secretions of the duct, tend to come back to normal.

Then, on the basis of preserving or reestablishing the normal condition of the bile outlets, notably the common duct and duodenal

*Read at Stuart Circle Hospital Clinical Club.

bile basin, periodic irrigation, as indicated by symptoms, usually recognized under the heading of duodenitis, of cholecystitis and sometimes gastritis, is a valuable procedure in internal medicine.

But, in addition to this, irrigation and lavage, in clearing out inflammatory products, permits the intermixing of two important digestive ferments, namely, bile (with bile acids) and pancreatic extract, into the digestive tube, as the gastric chyme is run in. These, together with the secretion of the intestinal tract itself, are needed to complete in large part the digestion of food products before the colon is reached.

Again, one should remember that bile is an excretion as well. It is important for bile poisons to flow from the liver unobstructed. Bile is the fluid medium through which the end products of muscles leave the body. The bile pigment, that physical property which, when retained to saturation in the body, produces jaundice, is undoubtedly a poison. While bile pigment alone, so far as I know, has never been shown to be a deadly poison, bile as a whole has been shown to be a deadly poison: of course, not in the same way nor after the same symptoms, but, as uremia is deadly, so bile retention seems capable of producing death by toxemia. So, bile pigment, bile salts, cholesterol and lecithin, retained in a gall tract, or retained in the common duct and the liver or blood stream and tissues beyond as the result of imperfect elimination at the outlet, serves only to make first for "biliousness" and later toxic symptoms of lethal nature.

My experience during the last two years in the clinical application of the Lyon method of transduodenal lavage has shown that:

1. Cases presenting symptoms of cholecystitis are, in a large percentage of cases, relieved.

2. Cases presenting symptoms of gastric disturbances, apparently with interlocking gall-bladder symptoms, are frequently relieved.

3. Cases of so-called dyspepsia, with tenderness over the gall-bladder region, are often relieved.

4. In cases of obstructive and catarrhal jaundice, relief of jaundice is gotten, elimination of toxemia is hastened, and gastro-intesimal digestive functions are re-established more quickly.

5. In a few cases of gall-stones, in patients declining operation, obstruction, as shown by X-ray and by clinical signs, is relieved.

6. In cases of hepatitis, a course of treatments of transduodenal lavage with solution of magnesium sulphate, when accompanied with internal use of bile salts, calcium chloride, liver substance and a dietary with low cholesterol ingredients, improvement results.

Patients not infrequently apply for this treatment, although much time is expended and some discomfort is suffered in each, after the course of treatment prescribed is completed. This arises, I believe, from the relief experienced from digestive disturbances trailing upon the course of the dysfunction of upper digestive apparatus. One patient, particularly, is recalled, who periodically applies for a duodenal tap, whereas, we feel that he really does not require further treatment of this sort. His claim is that he feels better for a week after each treatment.

I beg to call attention to a brief catalogue of patients who have received this treatment in my offices. Much of clinical data collected in examination and during the treatment is omitted. These cases are cited as representative of a rather large number of cases who have received this treatment.

Case I. Mrs. L., aged fifty-two, and overweight. For ten years patient has suffered from indigestion, dyspepsia, hepatic colic, gall-bladder trouble, gastritis, cramps in the stomach and like conditions. She has displayed symptoms of pain in right hypochondrium and epigastrium, cramps and intestinal distention. Examination by X-ray was negative for stomach pathology, without shadow of gall-stones but evidence of gall-bladder adhesions and thickening. Blood-pressure was 200 systolic Urine showed casts and trace of albumin.

Duodenal lavages were begun November, 1923. She had an attack of hepatic colic during first treatment. Twenty-six treatments were given. The hypertension was lessened, abdominal discomfort was less, and no attacks of pain were experienced during the last part of the treatments. She was given the last duodenal lavage October, 1924. Since then her blood-pressure has been markedly less and physical comfort better. She has lost no time from her work as bookkeeper.

Case II. Mr. B., aged forty-five, weight 210 pounds, complained of pain in epigas-

trium, intestinal gas, "dyspepsia" and constipation. Roentgen ray examination was negative. Transduodenal lavage was begun February, 1924. He was given thirty-eight treatments to August, 1925. The patient is a travelling salesman, markedly overweight, and addicted to periodic indulgences in excessive food and drink. The treatments have apparently relieved him of symptoms of cholecystitis. Although he has been told that further irrigation of the duodenum is not needed, he occasionally comes and requests a duodenal lavage.

Case III. Mrs. J., aged forty, normal weight, complained of severe morning headaches of long standing, associated with vomiting, "biliousness," and nervous symptoms. Examination indicated gastric atony, and cholecystitis. Appendix and both ovaries had been removed by operation. This patient received fourteen transduodenal irrigations by the Lyon method, covering the period from November, 1923, to May, 1925. The patient gained about seven pounds in weight during this period, and was much freer of headaches and nervous symptoms. Since the last treatment, reports from her indicate a good state of health and no headaches.

Case IV. Mr. B., occupation, salesman, aged thirty-two, complained of persistent indigestion and disorder of stomach for five years; had the same kind of stomach trouble in 1918. Appendectomy had been performed for relief, and for two years he was better of symptoms. Diagnosing his case as cholecystitis, he was given four duodenal irrigations. Before the fifth treatment was due, he had an acute hepatic colic. Surgeon operated and a number of gall-stones were removed from gall-bladddder. No X-ray study was made in this case. The treatments probably excited a quiescent gall-stone to attempt an exit. In this case failure of treatment resulted from an inadequate study of the case, an important lesson to draw.

Case V. Mrs. B., aged fifty, weight 145 pounds, complained of "lump in chest" and "gas on her stomach" for a long time, occurring in attacks. She received six duodenal irrigations from January, 1924, to May, 1924. Heart was arrhythmic. Heart disturbed her very much, she could not sleep, and she was very melancholy.

After the course of treatment, her general condition greatly improved and indigestion was satisfactory on an allowed diet. Her heart function was nearer normal and gave her no discomfort. The duodenal taps in this case seemed to produce a return to health.

Case VI. Miss B., aged twenty-four, school teacher, weight 152, complained of persistent indigestion, nausea and dyspepsia. No pain. Her condition was thought to be due to cholecystitis, as X-ray study was negative for pathology. She was given eleven duodenal irrigations by the Lyon method from March, 1924, to May, 1924. Her improvement was marked, and her symptoms were entirely relieved.

Case VII. Mrs. H., aged fifty-six, weight 185, complained of "heart disease," indigestion, aching under left shoulders, nervous attacks and faintness. She was diagnosed as having myocarditis, gall tract infection, hepatitis and climacterium. She was put to bed in the hospital and subjected to a series of duodenal lavages, covering a period of four weeks. The improvement was marked. Heart action improved, nervous symptoms diminished in violence, and general physical condition improved. She lost twenty pounds in weight.

Case VIII. Mrs. K., aged about sixty-five, came to the hospital complaining of shortness of breath, weakness, swelling of legs, and abdominal discomfort. Examination showed blood-pressure 230 systolic, cardiac hypertrophy and symptoms of myocarditis; there was liver enlargement and marked tenderness in right hypochondrium together with anasarca.

She was given frequent duodenal lavages by Lyon method for three weeks. The improvement in all symptoms was striking. She left the hospital with somewhat lower systolic blood-pressure, with relief from dyspnea and dropsy. Digitalis, rest and diet played an associate part in this result, possibly temporary, but nevertheless definite for the time. Wassermann was negative in this case, while culture of the bile showed B. coli.

Case IX. Mrs. A., aged fifty-three, weight 152 pounds, complained that it was impossible for her to "digest food," that food "turned to acid," that she felt distressed after eating, that "food regurgitated into her mouth after a meal," that her "gall-bladder was affected," and that she had a pain under her "right shoulder blade," etc.

Diagnosis of cholecystitis and gastritis was made. She was given a series of duodenal lavages after the Lyon method, and diet was limited. She was treated from January 14, 1924, to April, 1924. She reported complete relief from symptoms and a return to good health.

Case X. Mrs. C., aged seventy, complained of "mucus rising" in her mouth and a "bad taste,"—like she had a "persimmon" in her mouth; had tenderness "near the navel."

Diagnosis of cholecystitis was made. Bile culture was positive. She was given a series of twenty-two treatments. Excellent results were gotten. Patient was treated from October 15, 1924, to June, 1925.

Case XI. Mrs D., aged fifty-three, complained of diabetes mellitus and cholecystitis with jaundice. She was treated with transduodenal irrigation by the Lyon method from February, 1924, to December, 1924, receiving only eight treatments in February and March, and during the remainder of the period, she was treated for diabetes by diet without insulin. She had had no sign of jaundice since the course of treatment, and no colic. Her carbohydrate tolerance has improved. Her weight was 168 pounds. Apparently she is enjoying excellent health, living comfortably on 75 grams carbohydrates, 70 grams protein, and 100 grams fat without urinary sugar or diacetic acid.

Case XII. Mrs. B., aged forty-five, weight 162, complained of nausea, vomiting, and pain in epigastrium. After considerable study, diagnosis of cholecystitis was made. Patient was given a series of eight duodenal lavages from March, 1924, to June, 1924. The symptoms were stubborn but finally improved. Since then, although a case of hypothyroidism, she has been free of the stomach and intestinal symptoms which so greatly annoyed her prior to the use of transduodenal irrigations.

EXOPHORIA—ANALYSIS AND TREATMENT OF ONE HUNDRED AND SIXTY-SEVEN CASES.*

By CHARLES A. YOUNG, M. D., M. Med. Sc., Roanoke, Va.

Of 905 cases of otherwise uncomplicated refractions, 167, or 18.5 per cent, showed an exophoria of eight or more degrees at thirty-three cm. The muscle tests were made with a multiple Maddox rod, using a five m.m. light at six meters and a one m.m. light at thirty-three cm.

Refractive error, age and sex of the cases as follows:

Hyperopia.—130 cases, or 78 per cent, showing an average exophoria for distance 1¼ degrees, and for near 12½ degrees.

Myopia.—26 cases, or 15.5 per cent, showing an average exophoria for distance 1 1/3 degrees, and for near 15 degrees.

Mixed Astigmatism.—11 cases, or 6.5 per cent, showing an average exophoria for distance 4 degrees, and for near 15½ degrees.

Males.—65 cases, or 39 per cent.

Females.—102 cases, or 61 per cent.

Ages 10 to 30, inclusive, 95 cases, or 57 per cent.
Ages 31 to 50, inclusive, 54 cases, or 32 per cent.
Ages 51 to 68, inclusive, 18 cases, or 11 per cent.

No cyclophoria was found in any of these cases although in about 10 per cent only were tests for this condition made.

Only three cases, or 1.8 per cent, could be attributed to divergence excess. These three cases had an average abduction of sixteen degrees and an average adduction of nineteen degrees, with ten degrees of exophoria at six meters, and ten degrees of exophoria at thirty-three cm. Fourteen cases, or 8.4 per cent, could be definitely classed as cases of convergence insufficiency. The remaining 150 cases, on account of insufficient data, and also on account of my inability to understand and to judge the part played by a subnormally developed third conjugate innervation center, or to properly measure the hyper-development of the ciliary muscle (the only two explanations to my knowledge for the presence of exophoria with normal abduction, adduction and convergence near points), I can only attribute them in a general way to pseudo-exophoria, convergence insufficiency, hyper-development of the ciliary muscle, subnormally developed third conjugate innervation center, or, to what seems to me a reasonable explanation, a combination of two or more of the above causes.

Treatment

To stimulate convergence I have for several years added minus one-half to minus three diopter spheres to the cycloplegic findings, thereby requiring the patient to use one-half to three diopters more accommodation than would normally be needed at all times. Convergence being stimulated in proportion to the

*Read before the Virginia Society of Oto-Laryngology and Ophthalmology, May 7, 1925.

amount of accommodation actually used, the minus spheres indirectly increase the degree of convergence.

Normally, for every diopter of accommodation we have one meter angle of convergence: when reading at thirty-three cm. we use three diopters of accommodation and three meter angles of convergence. In exophoria, for near, the ratio of three diopters of accommodation to three meter angles of convergence is not met; for example, we may have only one and one-half meter angles of convergence when three diopters of accommodation are being used for reading at thirty-three cm. If we add a minus one fifty sphere, then, to read at the same distance, we will call into play four and one-half diopters of accommodation and three meter angles of convergence, which is the normal amount of convergence required at thirty-three cm. The average strength of minus spheres added to cycloplegic findings is as follows: in myopia, minus seventy-five sphere; mixed astigmatism, minus one sphere, and, in hyperopia, a minue one fifty sphere.

Convergence exercises prescribed using either a small light or some small bright object held at arm's length and carried toward the eyes until diplopia is produced, the exercise being repeated for five or ten minutes, three to six times a day. Following the exercises and the use of glasses with the addition of minus spheres, patients often state they are much more comfortable. On examination, however, muscle balance and near points are found unchanged. This may be accounted for by assuming that the innervation center itself has been strengthened. Out-door exercise and tonics seemed to benefit some of the patients. Prisms, bases in, are prescribed very rarely, except in presbyopia, and then for near work only.

The use of prisms, one to three degrees, bases in over each eye in separate reading glasses, in the segment of cement bifocals or in the segment of ultex bifocal, I have found very useful, and so far have seen no increase in the exophoria.

Prisms, bases in, prescribed for near work only, were used in five cases of presbyopia: myopia with presbyopia, none; hyperopia with presbyopia, four cases; mixed astigmatism with presbyopia, one case.

Results of Non-Surgical Treatment.

Hyperopia without presbyopia, 98 cases, exophoria at 33 cm. reduced 25½ per cent.

Mixed astigmatism without presbyopia, 8 cases exophoria at 33 cm. reduced 43 per cent.

Myopia without presbyopia, 18 cases, exophoria at 33 cm. reduced 63½ per cent.

Hyperopria with presbyopia, 32 cases, exophoria at 33 cm. reduced 29 per cent.

Myopia with presbyopia, 6 cases, exophoria at 33 cm. reduced 37 per cent.

Mixed astigmatism with presbyopia, 2 cases (patients did not return for further observation).

While the above results show that the cases of exophoria in patients with myopia obtain the greatest benefits from non-surgical treatment, it is to be remembered that most of these patients have a pseudo-exophoria, there being little or no accommodative effort required for their near work. This holds true to a lesser degree in the cases of mixed astigmatism.

Operations should not be considered until the other methods at our disposal have been given a thorough trial. As there are a number of patients not relieved by non-surgical means, operative measures are indicated and should be performed much more frequently than is customary at the present time.

In the few patients of this series that I had occasion to operate upon, I have advanced the internal rectus muscle by Worth's method, or tucked the same muscle by Todd's method.

Theoretically, at least, it would seem advisable to recede the external rectus on one or both sides by Jameson's method in divergence excess.

Partial tenotomy of one or both external recti may in low degrees of exophoria correct the imbalance, although complete tenotomy is not to be advised, as this operation is not only very uncertain in its results, but will, in many instances, result in a definite squint.

Operative Results

Case 1.—Mrs. W. B. H., myopia, forty-six years of age, had when first examined an exophoria of eight degrees for distance and twenty-seven degrees for near. One month following Todd tucking of right internal rectus muscle, exophoria was reduced to five degrees for distance and twelve degrees for near.

Case 2.—Mr. H. A. R., mixed astigmatism, twenty-nine years of age, showed when first examined an exophoria of eighteen degrees for distance and thirty-three degrees for near. Six weeks following Todd tucking of right internal rectus muscle, exophoria had been re-

duced to five degrees for distance and seven degrees for near.

Case 3.—Miss M. M., myopia with myopic astigmatism of moderate degree, thirty-four years of age, showed when first examined exophoria of two degrees for distance and exophoria of twenty-two degrees for near. Convergence near point twelve cm. Abduction was ten degrees and adduction nine degrees. Minus fifty spheres were added to cycloplegic findings for constant wear, and convergence exercises were tried for a period of eight months, with the following results: exophoria for near, twenty degrees; convergence near point, ten cm.; adduction, sixteen degrees, and abduction ten degrees. Two months following Todd tucking of right internal rectus muscle, exophoria had been reduced to one-half degree for distance, and six degrees for near.

It may not be out of place to remark that, in the operated cases there was in each case an apparent over-correction at the time of operation, which leads me to believe that it is almost as difficult to produce a permanent over-correction in cases of exophoria as it is in cases of squint.

612 *MacBain Building.*

THE TREATMENT OF CHRONIC EMPYEMA.*

By ARTHUR SUMNER BRINKLEY, M. D., Richmond, Va.

Recently there has been a decided trend toward conservatism, in the treatment of chronic empyema. The enormous increase in the incidence of empyema since the onset of the influenza epidemic in 1918 has afforded a most unusual amount of clinical material on which the previous methods of treatment have been fully tested, and in many cases the end results have been anything but gratifying. It has long since been learned that the treatment of empyema is not to be summed up in the simple formula "rib resection and drainage." Aspiration and closed drainage, irrigations periodically introduced, and as often discarded, found their indications based not on empiricism, but on a conception of the disturbed physiology as well as the pathologic anatomy involved.

Observations of acute cases in the process of transition to the chronic type and the study of large numbers of chronic cases led to a more adequate comprehension of the causes of chronicity. Dealing with the conditions which predispose to, or maintain chronicity, and the adoption of the antiseptic solution irrigation to its treatment, constitute the real progress in the treatment of chronic empyema.

The causes of chronicity most generally observed are faulty drainage, adhesions, the result of delayed diagnosis, tubercular infection, bronchial fistula, foreign bodies, and certain constitutional conditions apparently associated with the inability of the organism to cope with the infection. Inadequate drainage in the acute stage is by far the most common cause of chronic empyema. The opening may be too high or placed too far forward. There may be encysted pockets that are not broken up, but my experience has been that the drainage opening was not made large enough in the beginning, or the tubes were removed too early and the fistula allowed to narrow down or close in the presence of a suppurating cavity of considerable size. Continuous adequate drainage must be maintained if one expects to secure obliteration of a suppurating cavity. While the general trend is toward conservatism in the treatment of empyema, as heretofore stated, it must be borne in mind that every case is a law unto itself, and no two cases are quite alike. The etiology, pathologic anatomy and general condition of the patient must always be given the utmost consideration in out-lining the treatment and the method selected should be the one that is best adapted to the patient, taking into consideration always the percentage of risk attached to each method of procedure. If one believes that a patient can be cured by re-expansion of the lung, it would be nothing short of criminal to perform a mutilating operation, even though it be thorough and the result a cure.

Since the introduction of Dakin's solution, there has been a decided increase in the number of cases of chronic empyema rehabilitated, without resorting to a destructive, mutilating operation on the chest wall. Even in such cases that could not be cured by simple drainage, or rib resection and subsequent irrigation with Dakin's solution and an extensive operation had to be performed, the mortality has been tremendously reduced. This is very probably due to the fact that in many cases the discharge from the suppurating cavity has been rendered sterile or more or less attenu-

*Read at a meeting of the Church Hill Medical Society, Richmond, Va., September 24, 1925.

ated from the previous treatment by irrigations.

Generally speaking, the treatment of chronic empyema should be summed up as follows:

1. *Diagnostic aspiration* should be used to determine if the pus contains pyogenic organisms, or whether it is the so-called sterile pus of a tuberculous empyema. Ordinarily open drainage should not be done in the sterile tubercular type.

2. *Simple open drainage* should be used in all cases running a septic temperature, where there is rib necrosis or evidence of complication of large bronchial fistulas.

3. *Irrigation with antiseptic or saline solution*, preferably Dakin's solution, is of great advantage in every case of empyema, whether the cavity is large or small. It keeps the toxic material washed out almost as fast as it forms, thereby reducing the amount of toxins absorbed. The cavity is practically always diminished in size and rendered more or less sterile in case a subsequent operation is necessary. Colonel Keller, of the Walter Reed Hospital, who has probably had more experience with chronic empyema than any other surgeon in this country, usually irrigates the cavity with hypochlorite solution until seven successive sterile cultures are obtained from the depths of the cavity. The soft tissues are then mobilized and sutured in layers without further drainage.

4. *Decortication* is indicated where the cavity fails to become obliterated by the irrigation method; if the case is of long standing and there is massive collapse of the lung with marked thickening of the visceral pleura, decortication, as a rule, will be a complete failure or only a partial success. The persistent use of blow-bottles will materially aid the re-expansion of the collapsed lung in the majority of cases on whom decortication has been done.

5. *Plastic operations*, either conservative or radical, are indicated in cases in which the foregoing methods have failed. Of the conservative methods, the Estlander operation, consisting of simple rib resection, is the operation of choice and, if the condition is not of long standing, usually results in a large percentage of cures. In cases of long standing, with many recurrences and with a markedly thickened pleura, where there is a large cavity which does not decrease in size with irrigation and with massive collapse of the lung, there is nothing I know of which will result in a cure short of an extensive radical resection of the chest wall. Of the radical operations, Schede's is the method of choice. In this operation, a large U-shaped flap is raised, corresponding in extent to the underlying cavity—sometimes to the extent of nearly the entire pleural cavity, and consisting of all the soft parts overlying the ribs. The ribs, intercostal tissues, endothoracic fascia and parietal pleura outlined by this incision, are then excised *en masse*, the visceral pleura scraped and the external flap allowed to fall into contact with the freshened pleura. The flap is then sutured back in place and held in contact with the visceral pleura by the dressings, opening for drainage being left. This is the most radical operation available, consisting practically of the removal of nearly the entire chest wall of one side beneath the plane of thoracic muscles. The number of ribs removed is determined by the vertical extent of the cavity, but is generally from the second to the ninth, inclusive. The mortality in this operation is rather high, and should only be performed in cases of long standing and of the worst type, after the more conservative methods have failed and where the general physical condition is otherwise good.

BIBLIOGRAPHY.

1. Hedblom. Collected Papers of the Mayo Clinic, Vol. XIV.
2. Bickham. Operative Surgery, Vol. III.
3. Warbasse. Surgical Treatment, Vol. II.

601 *Medical Arts Building.*

UTERINE CURETTAGE, ITS LIMITATIONS.*

By E. L. KENDIG, M. D., Victoria, Va.

Uterine curettage is generally looked upon as a simple and common procedure. It is ordinarily called the beginner's operation, and by some it is hardly classed as an operation at all. Formerly, curettage was done to relieve many and sundry pelvic conditions, but from a better knowledge of female pelvic pathology, we know now that it has a more limited use. But even with this knowledge, the supposed simplicity of the operation and the hope that it may do good have been the chief indications for many promiscuous curettements in pelvic disorders.

*Read before the Southside Virginia Medical Association, at South Hill, December 8, 1925.

Every general practitioner, obstetrician, gynecologist and surgeon has these cases in his daily work, and for this reason I present to you this important phase of the so-called simple procedure with the hope that those present will give us the benefit of such experience by freely discussing the subject.

It is well to bear in mind the fact that a curettement consists of only removing the soft mucous lining of the uterus. It is a fact also that the good results attributed to a curettement in some cases are due entirely to the dilatation of the cervix and not to the removal of this mucous lining.

When specifically indicated, a curettage is a useful operation. When not indicated, it may give no relief, it may aggravate the existing malady, or it may be detrimental to the health of the woman in later life.

In determining the pathology in pelvic cases, a careful and complete examination cannot be too strongly urged. It should include a bimanual examination of the pelvis which will determine the position of the uterus and the condition of the pelvic organs. A bimanual examination of the patient under a general anesthetic, either before or at the time of the operation, will check up on the previous examinations and better enable the operator to ascertain the pathologic indications.

For a curettage a general anesthetic is best, unless there is some specific reason against its use. Dr. Howard A. Kelly, of Baltimore, advocates an office curettement without anesthesia, but at the same time he pointedly states that this should be done only by trained men. We have found in cases where we do not give a general anesthetic for one reason or another, a hypodermic of scopolamine of 1/100 gr. and morphia ¼ gr., given forty-five minutes before the operation, will do quite well.

It is also well to bear in mind that even a curettement done when indicated may be a failure for reason of some faulty technique or operative accident. I might mention, in this connection, puncture of the uterine wall, laceration of the cervix by the dilator and hemorrhage from a rupture of the uterine artery, due either during the operation to a laceration through the cervix or later to sloughing.

The most frequent and most serious accident of a curettage is a puncture of the uterus by one of the operating instruments, more often the curet. These punctures usually occur through the anterior wall of the uterus or cervix when the uterus is retroflexed, through the posterior wall, when the uterus is markedly anteflexed, or through the fundus when the muscular wall of the uterus is soft and boggy.

Medical literature shows that in the hands of the unskilled, the uterus has been bored through, and the operator has delivered, with the placenta forceps, a loop of the intestines, which was cut off with the belief that it was a product of gestation and thrown into the bucket.

The determination by bimanual examination of the position of the uterus will help to prevent the puncture caused by malposition of that organ. For cases with a soft and boggy uterine wall, Dr. G. H. Edwards and others recommend the administration of one ampule of surgical pituitrin just before the operation. This renders the walls of the uterus firm and has a tendency to prevent its puncture. Pressing the free hand on the abdomen over the fundus of the uterus renders the fundus more or less stationary, and by palpation assists in controlling the end of the curet, thus making a puncture less probable. Again, the use of as large a curet, as will pass through the dilated cervix, will render the uterine wall less easily punctured.

A curettement is essential for diagnostic purposes. Microscopic examination of the scrapings decides between a chronic endometritis, retained products of gestation, and a malignancy. A diagnosis of malignancy in this manner is important because surgery in the malignant uterus is only beneficial in the early stages.

A curettement is indicated in abortion when Nature fails to expel all the uterine contents, or in retained placental products following miscarriage or labor, provided in either case an acute infection is not present.

A curettement is indicated in chronic endometritis of local origin, such as a polypoid, decidual, senile, fungus, hypertrophic or hyperplastic endometritis, and in chronic endometritis exhibiting signs of undue hemorrhage. But, if there is a contributing cause for the endometritis, this must also receive attention.

A new mucosa following curettement will have a tendency to relieve a sterility due to a diseased mucous lining in endometritis. However, many curettements are done to relieve sterility with no results because the

sterility was due to other causes than a diseased mucous lining of the uterus.

To comprehend more fully the limitations of a curettement, we should discuss briefly also those symptoms and pelvic conditions where it is contraindicated.

A curettement of a quiescent or slumbering salpingitis renders the old infection acute and. instead of giving relief, will put the patient to bed for a long time or perhaps make a laparotomy necessary.

In postpartum sepsis the curet should not be used as it will scatter the infection already present in the uterus. Any septic matter should be removed by irrigation, with the gloved finger, or with a very blunt instrument. Except for removing in this way such septic matter, the uterus, in these cases, should be left severely alone.

In cervicitis, which is due in many cases to a gonorrheal infection, a curettement of the cervix and uterus does not remove the infection and the dilatation of the internal os and introduction of instruments through the cervix into the uterus brings about an infection of the uterine cavity. The cervicitis should be treated by local methods, and after this infection has been relieved, a curettement of the uterus may be done, if it is indicated.

Many cases of tubal gestation have been curetted. A bimanual examination, after giving the anesthetic, will usually prevent this unfortunate mistake.

Sometimes cases of pelvic pain in neurasthenia and other conditions of vague pelvic trouble are subjected to curettement. It is unnecessary to state that this is not only useless. but may be harmful.

Uterine hemorrhage, perhaps more than any other condition or symptom, has been the cause of a large number of curettements. This is due, no doubt, to the fact that a large proportion of cases of acute uterine hemorrhage is due to retained products of gestation. It should be remembered that the treatment of a metrorrhagia consists of controlling excessive hemorrhage and the removal, if possible, of the cause. In order to ascertain the causes of acute uterine hemorrhage and the proportion of these various causes, I have compiled below, from the records of our hospital, the etiology of our last 150 cases of metrorrhagia:

1. Retained products of gestation..84
2. Chronic endometritis 20
3. Malignancy 8
4. Ectopic 8
5. Uterine displacement 14
6. Myomata 10
7. Heart, kidney disease 2
8. Endocrine lesions 2
9. Subinvolution 2

It will be observed that the hemorrhage in about two-thirds of the above cases had its origin in retained products of gestation and chronic local endometritis.

If the hemorrhage is due to these local causes and there is present no contraindicated concurrent condition, a curettage might be indicated.

But it will be observed that in the remainder, or about one-third of the above cases, a routine curettement would be absolutely useless and in some instances decidedly dangerous.

If the hemorrhage occurs in a possible malignancy, the indications for a curettage are limited to securing specimens for examination. Should the operator attempt to curette the uterine cavity, without taking into consideration the possible malignancy, more harm than good might be the result.

If the hemorrhage is due to an extrauterine pregnancy, a curettage, of course, is out of question.

If the hemorrhage is due to a displacement, a curettement will not relieve the hemorrhage. Only a correction will give relief.

If the hemorrhage is due to a myoma, a curettement may aggravate it. Only a removal of this growth or the use of radium, as the case may be, will be curative.

If the hemorrhage is due to heart, kidney, or endocrine lesions, the treatment should be directed along etiologic lines.

If the hemorrhage is due to chronic subinvolution. a curettement will not stop it. Here a superabundance of fibrous tissue prevents a removal of much tissue with a curet and a contraction of the blood vessels does not take place. Only a hysterectomy will accomplish the desired result.

In conclusion, I might reiterate that a curettement has its use in indicated conditions, but by reason of its supposed simplicity and the lack of proper appreciation of its limitations, this use has been much abused. The

whole matter can be summed up with the statement that a curettage should be done only when indicated by the pelvic pathology present.

I will mention the following striking points in this so-called common and simple procedure:

1. A curettement is not a simple operation. although it can be done and is safely done at most any place by competent men.

2. It is best done under general anesthesia, but can be done quite well under a hypodermic of scopolamine and morphia.

3. The chief danger from the point of technique is puncture of the walls of the uterus by one of the operating instruments, more often the curet. This danger may be best avoided by knowing the direction of the uterine canal, giving a hypodermic of surgical pituitrin just before the operation in case of flabby muscular walls of the uterus, using as large a curet as will enter the dilated cervix, and keeping the free hand on the abdomen over the fundus of the uterus as a guide to the end of the curet.

4. From the records of 150 cases of uterine hemorrhage given above, it seems that a majority of the cases of metrorrhagia are due to retained products of conception. On account of a greater probability of retained products of conception as the cause, there is a great temptation to order a curettement on this assumption without making a definite diagnosis.

5. Do not decide upon a curettage in any case exhibiting symptoms of pelvic pathology, until after the causative factor has been determined. The examination may show that a curettage is indicated, and it may show that a curettage would be a catastrophe.

6. The indications for a curettage are limited to curettement for diagnosis, to curettement in selected cases of chronic endometritis, to curettement for the removal of retained uninfected products of gestation, and to curettement for the relief of a sterility due altogether to a diseased mucous lining of the uterus.

REFERENCES.

Ashton, William E.: Practice of Gynecolocy. Page 979.
Barrington, Fourness, M. S., Edinburgh. Med. Jour. of Australia, Jan. 24, 1925.
Berkeley, C.: Brit. Med. Journal. Page 90, Jan., 1923.
Edwards, G. H.: Jour. Fla. Med. Assn. Nov., 1924.
Gellhorn, George: Amer. Jour. Obst. and Gynec., 9:78.80 (January), 1925.
Graves, William P.: Gynecology. Page 592.
Harden, Albert S.: Jour. Med. Soc. New Jersey, Feb., 1923.
Kelly, Howard A.: Jour. Obst. and Gynec., vol. 10, 101, 106, July, 1925.
St. Jacques, Eugene: Canadian Med. Assn. Jour., Nov., 1923.
Watkins, Thomas J.: Gynec. and Obst. Pract. Med. Series. Page 28, 1923.

THE CARE OF THE MIND, A PREVENTIVE OF PHYSICAL AND NERVOUS DISEASES.

By BITTLE C. KEISTER, M. D., Washington, D. C.

Today we hear and read much about the relief and cure of the physical part of man; not a day passes that we do not read of some new theory and treatment for the relief or cure of our physical ailments. Our text-books on medicine, our standard medical journals and magazines, our encyclopedias, etc., are all brimming full of new and untried remedies for the relief of bodily infirmities, yet with all this array of remedial agencies for the alleviation of the physical, we scarcely see mention of any authentic treatment for the relief or cure of mental diseases or mental infirmity or for their prevention.

In view of these facts, is it any wonder that, out of our 105 million people in the United States, forty-five million of these have the mental power of a thirteen year old youth, while fifteen million possess only the mental force of an eight year old child! Of the remaining forty-five million, statistics show that twenty-five million are classed with the mediocre, while five million are classed as "A" in mentality, and the remaining fifteen million classed as "B" in mentality. These two latter do the entire mental work of our country. (Prof. Wm. Star Myres, Princeton University). According to statistics, we have in the United States sixty million morons!

In view of these humiliating facts, should we not, as a profession, begin to take cognizance of the fact that we are not placing enough stress on mental diseases and their prevention? When we realize the close relation of the mental to the physical, and the adaptability of the nervous system, its possibilities in degree of organization, and appreciate that the nervous tissue is the most delicate in the body and possesses so little reparative power, we may wonder that it can be at all in a healthy state. An eminent pathologist has recently discovered that "bad temper" has the effect of increasing the amount of sugar in

the blood by 10 to 30 per cent in the course of a few minutes, causing an angry person to fight the object of his rage. He becomes "hot-blooded" from the intoxication of carbonaceous material in the brain and muscular system, due, in part, to a change of a tiny gland about the size of a pin. When this little gland functions normally, the person remains calm and even-tempered, but if it exudes its essence too lavishly, hatred, passion and quarrels ensue.

It is upon the perfect integrity of the fine adjustments of this slender and intricate organization that the healthy function of every other tissue of the body, even to that of the most insignificant secreting gland, depends, enabling us to estimate the extent to which our physical as well as our mental well-being is under its control. To increase this marvelous significance, we have only to learn that Nature has seen fit to make what has been termed the "master tissues" of the body, the *brain* and *spinal cord*, dependent for their own vitality upon the blood supply which comes to them through arteries which, for the most part, are what are called "end-arteries" or arteries which have no communication with one another, a plan, which means almost inevitable death to these parts when the arteries break down or become occluded (Courtney).

By careful study we have learned in this cursory way something of the wonderful mechanism of the human brain, its adaptations as well as the risk from its impaired usefulness. Let us, then, study more vigorously how its hygienic conditions may be preserved and its greater efficiency secured.

In this brief review of this important subject, we may consider three chief factors, heredity, environment and education. In late years, not so much influence has been attributed to the dark side of the question of heredity as the "fatalists" of former generations gave it. The great change that environment and education may bring about in the individual has become recognized and has assumed larger proportions. We are aware, however, that the passions and appetites are much keener and more difficult to control in those who inherit them from a line of ancestry who have never checked them, but in whom vice has been accounted a glory and a virtue. It is much easier for some who inherit a placid, even temperament, with no strong emotions, to be outwardly virtuous and orderly, than for those just mentioned; but all have it in their power to choose the right, provided their early home training has not been omitted.

Habitual selfishness, disregard for the rights or feelings of others, and gross immorality long indulged in, may reduce one nearly to the level of the brute; the vicious act may seem to be due to irresistible impulse, but the perpetrator is none the less culpable. He who wilfully intoxicates himself that he may commit murder is still a murderer, and one of the deepest dye of criminals. Life to all is a warfare! To some it is much more severe than to others. None are born with a constitution incapable of virtue, though many are drifting with the current, wholly oblivious of their environment. One of the encouraging features in the problem of preventing diseases of the mental faculties in the young and immature child is proper environment. However much the child may have been hampered through his parent's ignorance, or through inherited weakness, the surroundings of life will have a great and lasting effect upon his mental condition. Unlimited wealth and foreign travel are not necessary for his well-being. Favorable home surroundings, where sympathetic natures guide the family life, where sharp criticism and heartless fault-finding are unknown, have much to do in the formation of character and the prevention of mental abnormalities in the young and maturing minds.

Where the training of the earlier years is regarded as a sacred trust, though mistakes be made, the after-memory clings with a most tenacious hold, and the motives and impressions then installed are longest lived. These home impressions have much to do with our highest ideals and success in any position in our after career. Many of our greatest minds owe their success to the home impressions made in childhood by a consecrated mother or father, while, on the other hand, where unfavorable environment harass and annoy at a time when the young mind should be relieved from care, or when a continual drumming daily on the "mental strings," they will sooner or later become fragile and finally break, causing mental deterioration, such as brain-storm, etc. At this special period of life the young are more susceptible to vague impressions, and, unless special precautions are interposed by parents or guardians, mental

deterioration in the form of dementia precox may ensue. This is a disease of early life and a dementing process from the beginning. As school children, some of these patients are bright and receptive, learn easily, are responsive, and show quick nervous reaction and impressionability. Others have difficulty in keeping up with their classes. While perception and memory are good, reasoning and judgment are not correspondingly developed. They are erratic and lacking in inhibitory control. They are subject to headache and, if pressed, break down in school work. They undergo attacks of dreamy abstraction, and find it difficult to concentrate the attention.

In some instances erraticism goes over by imperceptible degrees into pronounced mental perturbation. In others there is a sudden change from the habitual states of feeling and acting. This may appear coincident when the boy becomes a man or the girl a woman. It may be that the determining cause is a fever, an injury, or some shock to the nervous system. Symptoms of acute depression or excitement may occur, followed by a characteristic train of symptoms, and of which there are three special classes recognized,—the hebephrenic, the katatonic, and the paranoid.

In the hebephrenic form the patient develops a state of reserve, shyness of strangers, and depression, is easily embarrassed, shuns company, is deeply religious, devotes himself to Bible study, is fussy in dress, spends much time in the bathroom and over toilet operations, and is addicted to self-abuse. Later in the disease, he becomes bombastic, self-assertive and egotistic. He falls into a state of brooding, consults various physicians, reads quack advertisements, becomes concerned about his bodily states and the loss of virility. Delusions of a religious character develop, and he may imagine himself a second Christ.

The second form, the katatonic, has much in common withe the hebephrenic. The distinction between them is based largely upon the predominance in the katatonic form of stupidity states, and a muscular rigidity, negativism, contrariness in conduct, imitativeness and automatism. These patients resist attentions in bathing and dressing as well as the proper care of the person. They complain of being light-headed, and of the baneful influence of certain other people. With the many other katatonic manifestations but more pronounced, there is increased apathy and stupor, besides being unmindful of the functions of the bladder and bowels, which may be arrested, involuntary, or by his own volition. Many of these conditions are regarded as arising from perverted sexuality.

The paranoid form of this disease has much in common with the hebephrenic as well as the katatonic forms. The predominant note in these cases is one of egotism and boastfulness. The patient believes himself created for some special mission, to reform society, to promulgate new rules for dress and living. He may believe himself of royal birth and parentage. Impulsive acts of violence may occur at any time when least expected, and he may become dangerous.

These are but a few of the many abnormal conditions that we may observe in this class of mental diseases, which take their origin from early childhood, and might have been prevented to a large extent if early and proper training had been instituted with a thorough, proper course of treatment. In the beginning of treatment for dementia precox and the various symptomatic divisions, we must take time by the forelock, beginning with the very onset of symptoms, keeping the patient quiet and away from the outside world for an indefinite time, administering proper nervines, tepid and cold shower baths daily, omitting school-life for at least six months or a year, using only such medicines as reconstructives and nervines, coupled with a full supply of nutritious and healthful diet, fruits, etc.

Strange as it may seem, many of our mental diseases in both childhood and adult life may take their origin from very slight causes, such as a high fever from a protracted disease, like typhoid, tuberculosis, pellagra, uremia, diabetes, influenza, etc. Then we have certain drugs that produce mental wandering, mental unbalance, and, if long indulged in, we may have a mild form of mania bordering on maniac-depressive insanity. Hyoscine, cocaine, morphine, etc., and all alcoholic drinks possess narcotic properties capable of setting up various degrees of brain poisons and mental aberration. Then we have gas poison and world-war shocks, trench poison, etc., as amply demonstrated by some of our "doughboys" in our government hospitals, whose mental capacity has deteriorated to even that of a twelve year-old boy. This is but a common

or daily observation to the writer, being located as he is, near and having access to the great Walter Reed Hospital. Institutional and vocational treatment and training, with all that pertains to the welfare and happiness of these unfortunate soldier boys, is being done in a most lavish and commendable way throughout our country. Yet it seems to me, after much observation in the various municipal and private institutions for mental diseases of both this and other countries, we need more of the *personal humane* feature to predominate the atmosphere of such institutions.

As stated in the outset of this paper, the delicate and intricate organization of the nervous system as furnished and made to function through the central powers of the brain and spinal cord, it is but natural that none but the most "thoroughly read" and competent experts on mental diseases should be allowed to preside over these institutions and treat the unfortunate victims, many of whom, instead of growing daily worse under unfavorable environment and unsuitable treatment, should in due time regain their normal state. Our past regime in the treatment of these patients has been a reflection and a disgrace on the U. S. Government, if you will pardon the expression. It is also a burning shame that any State Government should allow its hopeless insane, much less the curable cases of mental disease, to be placed in jail or bound in ropes temporarily, or until a commission of lunacy is appointed and permanent arrangements made for the transmission of the patient to an asylum for the insane. This part of my subject is only partially treated, as space will not permit further comments.

In summing up the various causes of mental diseases, their prevention and cure, as cursorily touched upon in this paper, we have scarcely broached the subject. In the world's present state of mental unrest in both Church and State, supervening upon the World's greatest of all wars, viewing it in all of its sad and heart-rending phases, including the loss of friends and loved ones, homes, etc., and the estrangement of family ties in divorce suits, etc., it is no wonder that mental deterioration is manifesting itself in the world-wide unrest.

Of the 867,420 applicants as volunteers for the world war who were rejected on account of physical and mental disability, over 40 per cent of these applicants were rejected on account of mental deficiency, not including illiteracy. According to statistics, in the year 1918 there were in the United States 239,820 insane persons. One-eighth of our population is of foreign birth, and one-third of the insanity of the United States is among the foreign born. According to Dr. Howard Chase, a distinguished writer and author on Mental Diseases, "mental diseases and insanity are on the rapid increase in the United States." The promiscuous intermingling of races and intermarrying, regardless of the laws of eugenics, the common intermingling of the sexes with joy-rides at the sea-shore resorts, etc., with their usual outcome or sequel of divorce suits, constitute, in the end, one of the prime causes of mental worry and anxiety, with consequent loss of nerve and brain force as well as a loss of healthfulness of both mind and body. Thousands of lives are today doomed to such an existence. Even in the conservative State of Old Virginia, we had over 2,900 divorce suits last year, while in one or two other States in the Union there were more than 4,000 divorce suits in a single year.

Taking a liberal and broad view of the present situation of the prevailing conditions existing throughout the country, the unrest of the nations, the many and varied conspiracies to undermine both Church and State, political scandal and rivalry, antagonism between capital and labor, illiteracy and superstition, bolshevikism, etc., together with some of the modern heresies that are being broadcasted by so-called educated visionaries, we have a most wonderful influence for evil over the minds of the young. The tendency toward mental deterioration and insanity is rapidly showing itself in many and various ways. This unfortunate state of world-wide human conditions only emphasizes the importance of the medical profession tendering its good offices to the Government, both State and Federal, toward the prevention and cure of a large per cent of mental diseasese, which, if not properly treated, finally terminate in hopeless insanity to both the patient and his posterity.

Aside from vicious environmental conditions, we know that tainted heredity from all causes is responsible for the direct inheritance of, and the diathesis to, such mental and neuropathic diseases as the maniac-depressive psy-

choses, dementia precox, epilepsy, imbecility, idiocy, feeble-mindedness, Huntington's chorea, Friedrich's and Thompson's diseases, familial tremors, muscular atrophies and dystrophy, multiple sclerosis, cerebral hemorrhage, arteriosclerosis, the neuropathic constitution, as well as the diathesis to tuberculosis, syphilitic taint, heart disease, eye defects, kidney and skin diseases, etc., as well as cases of alcoholism and certain classes of explosive or impulsive persons who find it impossible to control their impulse and animal instincts.

Some of our ablest investigators and thinkers along these lines have concluded that, while race impairment is appalling and preventable, the day and time is rapidly approaching when more radical steps should be taken for the cure and prevention of many of the social evils prevalent in our country. To prevent the propagation of the grossly unfit, such as the confirmed, habitual criminals, rapists, certain defectives, degenerates, feebleminded, etc., I am of the opinion that the worst of these degenerates, who cannot be effectively and constantly segregated, should come within the laws enacted by the States of California, Iowa, Indiana, Connecticut and other States of the Union where sterilization is required of both men and women of these classes, under conditions that safeguard their personal and constitutional rights. That these laws, drastic as they may seem, are not considered inhuman or cruel by those to whom they apply, is evidenced by the fact that individuals not coming strictly within the provisions of these laws have, as is recorded in the State of Iowa, requested that they be sterilized by the operation—in the male, of vasectomy, or in the case of the female, by the removal and tying off of a portion of the fallopian tubes.

One of the most urgent reforms in the direction of segregation is better regulation by the local and State Boards of Health for the following up of those suffering from chronic alcoholism and victims of the narcotic dope-habit. We have in the United States over one million drug addicts at this time; over 500,000 defectives in intellect, hearing and vision; 2,000,000 in hospitals and homes for the sick; 100,000 in reformatories, and an equal number in prisons, many for life, making approximately 4,000,000 dependents in the United States to be cared for by institutions of charity and the Government. In view of the above mentioned conditions, can we define ours as a truly enlightened, highly civilized and efficient nation when one person in about every sixteen and one-half must be classed as inefficient, defective or dependent? (Hon. Jno. J. Kindred, M. D.)

According to statistics, one-tenth of the women of the world bear all the children that are born; and, appreciating the well-accepted idea of the influence of environment and training, how shall we nurture, protect and develop the approximate one-tenth of the human species that bear all the children, who are to become the parents of the future race and nations?

These astounding facts and figures are strong enough to convince any thinking mind that, as a nation of the Anglo-Saxon race, we are living ahead of our day, ahead of our generation, ahead of our forefathers. We need to take an inventory of our past history in order to *find* ourselves, and learn what epoch or era we have arrived at. A retrospective of our ancestry may enlighten us along certain lines. We should get back to the days of Andrew Johnson, Zachary Taylor, Andrew Jackson and others whose ancestors were of the plain, pure and honest type, rugged, hard-headed, with little college education and scarcely any of the modern society privileges, for these plain pioneers of their respective callings did honor to their country and to themselves.

In this rapid-going age, we need more of this rugged, honest type of men to guide the ship of State.

"More might be said hereof to make a proof,
Yet more to say were more than is enough."

1315 *Fern Street, N. W.*

BENIGN TUMORS OF THE MALE BREAST.

By FRANK HELVESTINE, Jr., M. D., Danville, Virginia.

Neoplasms of the male breast as compared with the female are a rarity. This is readily explained by the fact that the female breast is a functioning organ which undergoes a number of changes during the period of sexual activity from puberty to the menopause. Due to its physiological activity it is more subject to disease, and due to its size and exposed position it is more subject to trauma than the male breast, which is in most cases a very rudimentary structure. Benign tumors are even more

rare than malignant neoplasms of the male breast. Williams[1], in 2,420 cases of breast tumors, found that twenty-five of the neoplasms occurred in the male breast. Of these twenty-five tumors six, or 24 per cent, were benign. The benign tumors of the male breast were .24 per cent of the total number of breast neoplasms. Palermo[2] states that 14 per cent of tumors of the male breast are benign. Schuchardt[3] in a series of collected new growths of the mammary gland in the male found 274 malignant neoplasms and twenty-one benign.

The most common benign tumors are those in which both connective tissue and epithelial elements enter into the neoplastic process. A few cases of simple benign tumors in which only one element, epithelial or connective tissue, was involved have been reported, but they are very rare occurrences. The cases reported include myxoma, lipoma, myoma, fibroma, angioma, chondroma and adenoma. Of the epithelial-connective tissue tumors the fibro-adenoma is the most common. The cystadenomas come next in order of frequency. Cystadenomas may be divided into two classes, (1) simple cyst adenomas, and (2) papillary cystadenomas. The tumors in the first class are fluctuant and the cystic cavities may contain clear, dark brown or bloody fluid. Spencer[4] reports a case in which the tumor was present since birth and at the age of four began to enlarge rapidly to the size of a hen's egg. Amputation of the breast was performed and the tumor found to contain multiple cysts with a bloody fluid content. Carpenter[5] aspirated a milky fluid from a tumor in the breast of an eighteen months' old male child. Recently, Speed[6] has reported finding a galactocele in a man fifty-three years of age.

The cases of papillary cystadenoma are somewhat more numerous. They usually occur between forty-five and sixty-five years of age and of the benign tumors are most likely to undergo malignant degeneration. David[7] was able to collect eleven cases of papillary cystadenoma from the literature. In this series 35 per cent of the patients were under fifty years of age and 30 per cent between fifty and seventy years of age. The tumor was usually found under or near the nipple and rarely projected above the surface of the skin. It was freely movable and its size depended on the duration of growth. David states that the most characteristic symptom is a discharge from the nipple, which occurred in 75 per cent of cases. Pain was present in the region of the tumor in a third of the cases.

The tumor usually consists of one or more cystic cavities containing blood tinged fluid. A portion of the cavity or its entirety may be filled with a red friable papillary growth. Microscopically, the wall of the cyst is lined with columnar epithelium which in certain parts is thrown out into branched processes with a connective tissue stalk. Recurrence may take place following removal. The treatment indicated in these cases is amputation of the breast.

Woodyatt[8] divides adeno-fibromata, the most common benign breast tumor found in the male, into two classes: (1) sharply circumscribed, dense tumors which arise in the breast of young males and run a painful clinical course. There is usually no history of trauma. Microscopically, there is little or no evidence of inflammation, but all of the characteristics of the corresponding fibro-epithelial tumor in the female are present. (2) Diffuse or ill-defined growths which may occur at any age as the result of traumatism. Microscopically, these enlargements have the same structure as those of the first group. Signs of inflammation are more in evidence, however, so that their differentiation may not be easy. They are called fibro-adenoma because of their progressive growth and microscopic structure. This formation corresponds to the "traumatic induration" of some writers.

Rud[9] has compiled a series of sixty cases of fibro-adenoma from the literature, and adds five cases of his own. In his own cases the ages ranged from eighteen to twenty-two years. Speese[10] states that fibro-adenoma of the male breast vary greatly in size. Tumors seen in boys accompanied by an inflammatory process (adolescent mastitis) are usually small. Their growth is slow and progressive, several years elapsing before they reach the size of a walnut. Rapid growth may however occur. Whelan reports a case in which the tumor grew during a year's time until at removal it weighed a half pound. The neoplasms may be bilateral, usually however not appearing simultaneously (Griffin[11], Gangitano[12]). Owens and Eisendrath[13] have reported malignant degeneration in a fibro-adenoma.

Case Report

The patient is a white man, twenty-one years of age, complaining of a "knot" in his breast. His mother had had a "cyst" removed from one of her breasts, and his maternal grandmother died from carcinoma of the uterus. The patient's past history is unimportant as relating to his complaint. There is no history of trauma. Five weeks prior to operation he first noticed a small nodule in the region of the left nipple which gradually enlarged. The patient suffered no pain or discomfort from this growth.

Routine physical examination showed nothing abnormal, with the exception of enlarged lymph nodes in both axillary and inguinal regions. Examination of the left mammary gland showed an elevation of the nipple by a circumscribed mass about 2 cm. in diameter. This mass was firm in consistency, freely movable on the chest wall, and unattached to the skin. There was no retraction of the nipple or any change in the areola or skin over the tumor. The nodule was situated eccentrically and was covered by the upper two-thirds of the areola. The tumor was removed under local anesthesia. It seemed to be well

Fig. 1.—Microscopic section showing general structure of tumor. Low power.

encapsulated and was readily dissected out. It was irregularly nodular in contour and about 2 cm. in diameter. Gross section showed small nodules from .5 to 1 mm. in diameter, of a pinkish translucent tissue raised above the surface and separated from each other by bands of dense white tissue. The nodules protruding above the denser tissue gave the surface a pebbled appearance. Microscopic examination of a portion of this tumor shows irregular glandular structures surrounded by concentrically arranged loose edematous connective tissue stroma and separated from like structures by dense bands of connective tissue. Blood vessels are not numerous and there is no congestion. A small number of lymphocytes are present which do not seem to bear any relation to the blood vessels in their location. Occasional islands of fat cells are encountered. The glandular alveoli are made up of several layers of cuboidal cells which vary

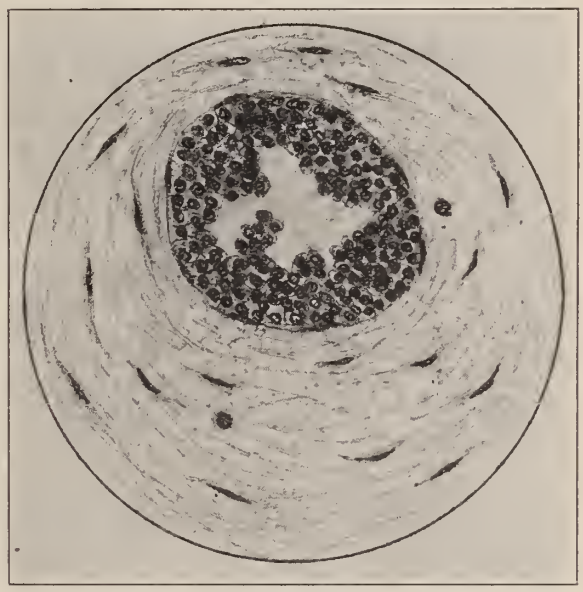


Fig. 2.—Microscopic section showing structure of typical acinus. High power.

in size and contain pyknotic nuclei. The cytoplasm is finely granular. Occasional mitotic figures are seen. In the large glandular structures finger-like projections of epithelium project into the lumen of the alveoli, and in some of the small alveoli the proliferation has taken place to such an extent that the epithelium forms bridges dividing the lumen into several parts. The epithelium rests on a thin basement membrane. No sustenacular "basket" cells are present.

Summary

1. Tumors of the male breast are rare, because in the male the mammary gland is rudimentary in structure and a non-functioning

organ. Benign tumors are even more rare than malignant.

2. Of the benign tumors the fibro-adenoma is most often encountered. These tumors usually occur in young males, frequently follow trauma, and are either circumscribed or diffuse. Malignant degeneration is not as frequent in fibro-adenoma as in the cystadenoma. particularly the papillary cystadenoma.

References

1. Williams, R. Lancet, vol. XI, No. 6-7, p. 261, 1889.
2. Palermo (cited by Rud).
3. Schuchardt. Arch. f. klin. Chir., vol. XXXI, p. 1, 1885, and Arch. f. klin. Chir., vol. XXXII, p. 277, 1886.
4. Spencer (cited by Speese).
5. Carpenter (cited by Speese).
6. Speed, K. Annals Surgery, vol. LXXXII, No. 1, p. 45, 1925.
7. David, Annals Surgery, vol. LXXV, p. 652, 1922.
8. Woodyatt. Amer. Jour. Med. Sci., vol. CXXXVIII, p. 244, 1909.
9. Rud, H. Hospitalstande, Copenhagen, vol. LXV, No. 15, p. 253, 1922 (abst. Jour. A. M. A., vol. LXV, June 6, 1922).
10. Speese, J., Annals Surgery, vol. LV, p. 530, 1912.
11. Griffin, Johns Hop. Hosp. Bull., July, 1909, p. 218.
12. Ganginto, Deut. Zeit. f. Chir., vol. CIII, S. 1, 1909.
13. Owen and Eisendrath (cited by Speese.)

323-324 *Masonic Temple.*

INTERNAL INJURIES WITHOUT EXTERNAL SIGNS—CASE REPORTS.*

By BEVERLEY F. ECKLES, M. D., Richmond, Virginia.
McGuire Clinic.

Generally speaking, it is impossible for serious internal injury to occur without causing symptoms or signs that may be elicited and interpreted by careful study. It is a well-known fact that grave damage to internal organs may take place in the absence of even the slightest scratch or bruise of the body surface. The extent of the injury to the external parts bears no relation to the severity of the injury sustained by the internal viscera.

By thorough and diligent examination enough signals of underlying distress may be disclosed to indicate the proper treatment in almost every case of this kind. Their appearance may be immediate; or their development may be either delayed or else so insidiously progressive that repeated examinations at short intervals are required for their timely detection. The most important of these signals are shock, pain, tenderness, muscular rigidity, nausea and vomiting, the presence of a palpable mass, and increase of the pulse rate without much rise in temperature in the early stages. It is seldom that all of these symptoms occur in a single case. However, in nearly every case enough of them are present to indicate the proper solution of the problem presented. The greatest aids in the diagnosis are a history of injury; an exact account of the clinical course from receipt of the injury to the time of examination; and a careful, painstaking physical examination. Catheterization of the bladder, with urinalysis, and digital examination of the rectum may yield information of the greatest value. Whenever possible, an examination of the blood should be made, including both white and differential counts, and a haemoglobin estimation.

The treatment may be active or expectant, depending upon the nature and the extent of the jury. Expectant treatment is only indicated, first, when the local symptoms are insignificant, the general condition is excellent, and the patient is manifestly rapidly recovering; and second, as a temporary measure, when the patient is too ill to withstand the added shock of an operation. Overwhelming shock must first be successfully controlled by rest, warmth and morphine before active treatment can be employed. The active treatment is surgical and is governed by the anatomic and physiologic problems arising in the particular case.

The first case which I report occurred in my own practice and has been recorded elsewhere in detail.

The patient, T. E. B., Jr., was a boy of twelve, previously healthy, who was struck in the scrotum by the knee of a playmate while at recess at school. He fell to the ground, momentarily unconscious, and remembers nothing further of the accident. When first seen by his doctor several hours later, excruciating abdominal pain was the only symptom present. Later in the evening slight rigidity of the abdominal muscles appeared, the agonizing pain persisted in spite of opiates, and he was brought to the hospital. Examination showed a temperature of 100 1/5° with pulse of 96. There was not a scratch on his body. The scrotum and its contents were normal. The abdomen was distended, rigid and tender, the lower half being especially affected. His urine was normal. Blood count showed 20,800 white cells with

*Read before the Southside Virginia Medical Association at South Hill, December 8, 1925.

93% polys. He had vomited only once since his injury.

Exploratory laparotomy was urged and accepted. At operation the small bowel three feet from its lower end was torn completely across transversely and there was a perforation two inches above this. Six inches of intestine were resected and an end-to-end anastomosis was done. The appendix was not removed. The abdomen was closed with drainage.

Post-operative course was stormy. He had a partial obstruction which was relieved by removing the drains. Later he developed a large abscess which was opened through the right flank. His final recovery was complete, save for a weakness of the abdominal wall due to fascial sloughing.

The second case, N. L., a little girl of six, came to Dr. W. Lowndes Peple at the McGuire Clinic, October 9, 1925. At 11:30 A. M. that day she fell from a slideboard in the playground. She fell face foremost about six feet, striking against a stob driven into the ground. She did not become unconscious but complained of great abdominal pain, was drowsy, and had several spells of nausea and vomiting. She voided bloody urine containing clots. She was seen in a few hours by her physician who immediately brought her into the hospital. Examination then showed rigidity of the abdominal muscles, especially the left lower rectus, with tenderness on palpation on the left side. No mass was felt. There was no bruise on the abdomen. Catheterization removed several ounces of bloody urine from the bladder. Her temperature was 98.6° with pulse of 90. Blood examination showed 20,600 leucocytes with 91% polys.

A tentative diagnosis of probable rupture of the bladder was made and exploration was done through a left rectus incision. There was a small amount of serum in the peritoneal cavity, but the abdomen and its contents, including the bladder, were uninjured. There was a large haematoma beginning in the left kidney region and extending down behind the peritoneum along the course of the ureter to the bladder. The abdominal wound was closed and a left lumbar incision was made. The kidney-capsule distended with blood was exposed and opened without delivering it. A number of clots were removed and much free old blood was mopped out of the capsule. It was then discovered that there was a fracture of the lower pole of the kidney extending from cortex to pelvis, the separated fragment representing about one-eighth of the kidney. A long strip of gauze was packed over the tear in the kidney within the capsule and then beneath the lower pole, outside the capsule, thus bringing the small lower fragment back into contact with the main portion of the organ and controlling the bleeding.

She was returned to her room in good condition and made an easy, uncomplicated recovery. She left the hospital on October 30th and was reported completely well by her doctor on December 3, 1925.

The third case, B. D., a little girl seven years old, was referred to the McGuire Clinic to the service of Dr. Stuart McGuire. On the afternoon of September 24, 1925, while at play, she jumped over a low hedge, tripped and fell flat, striking her abdomen against a stationary iron lawn-sprinkler. She sprang up shrieking with pain and ran home. Her mother undressed her, put her to bed and called her doctor. He saw her in a short while and found her in great pain which was generalized over the abdomen and was intensified by any movement. She had one very slight abrasion of the skin over the abdomen, but a careful examination was otherwise negative. She was given a hypodermic. Next morning he called Dr. McGuire in consultation. At that time the child was in good condition though still suffering considerably. There had been no nausea or vomiting; the abdomen was not distended; there was no localized tenderness; no masses were present; but there was very slight muscular rigidity. Her blood count was practically normal. Her temperature was around 99.5°. Dr. McGuire saw her again that afternoon and her condition was the same. During the night she became worse and at his visit the next morning she was manifestly ill. He advised immediate transfer to the hospital and operation without delay. On admission, her abdomen was distended, rigid and quite tender, especially in the lower part in a rather localized area. Her temperature was 100.5° and her pulse 110. Her blood count showed 8,000 white cells with 79 per cent polys.

Operation was done through a midline incision and revealed a perforation of the ileum about twelve inches from the ileocecal valve. the perforation being surrounded by a margin

of gangrenous tissue. This area was excised and the opening closed by suture. Drainage was inserted, the wound was lightly closed, and she was returned to bed in fairly good condition. She was very ill for several days and developed a fecal fistula which is still draining slightly. There was extensive infection and gaping of the abdominal wall, which has closed in considerably at present. Though her life hung in the balance for some time, recovery was rapid after it once began, and on October 26th she was discharged to the care of her doctor at home, safely convalescent.

Resume

One of these cases showed a trivial bruise of the abdominal skin. The other two were without a scratch. Two were badly shocked at first, but had recovered by the time they entered the hospital. In all three cases, abdominal pain was a prominent factor. All of them developed rigidity of the abdominal muscles, with underlying tenderness on pressure.

An exact diagnosis was not possible in any of them, but each one presented symptoms of intra-abdominal injury clearly enough to make exploratory operation necessary. These symptoms came on rapidly in two of the cases and were very slow of development in the third. This emphasizes the importance of keeping all such cases at rest in bed under careful observation, making frequent examinations until enough symptoms appear to warrant exploration, or until all possible danger of any internal injury is well past.

Conclusions

Extreme prolonged pain; the development of shock; muscular rigidity with localized or generalized tendernes, even in the absence of nausea and vomiting; the appearance of a mass, or the withdrawal of bloody urine from the bladder may in any given case be of sufficient importance to compel exploratory operation.

In the presence of any of these symptoms, if reaction from the injury is not prompt and progressive, operation is advisable.

Should there be no internal injury, little harm is done by such a procedure, and if injury be present it can be dealt with at the most advantageous time.

MEDICAL TREATMENT OF PEPTIC ULCER.*

By GEO. P. HAMNER, M. D., Lynchburg, Va.

The term peptic ulcer is an incorrect and unfortunate one as applied to digestive lesions of the upper alimentary tract; as well as the term gastric ulcer, which should also be discarded for the much more comprehensive terms, prepyloric and postpyloric ulcers, thus readily designating the exact location of the lesion. The peptic glands are found only in the fundus and central portion of the stomach and are supposed to be the sole source of the ferment pepsin, which by the action of free hydrochloric acid is converted into pepsinogen.

Hence, the term peptic ulcer is incorrect, since the large majority of ulcers are found near the pylorus, either anterior to or posterior to it.

But in the discussion of this symposium it is assumed that the term used to designate the condition is used broadly to comprise all lesions in that portion of the alimentary canal included in the stomach and duodenum.

Ulcers found on the gastric side of the pylorus are very obstinate and the prognosis for healing by medical treatment is not favorable; though undoubtedly some recent lesions in this position heal spontaneously, and without ever having been diagnosed in life, as manifested by autopsies. Those showing a tendency to chronicity may be given a trial for a medical cure by controlling the hypersecretion and pylorospasm, and correcting the hyperacidity, together with eradicating foci of infection along with general application of the usual health measures; but they are most certain to come eventually under surgical treatment for a permanent cure.

The converse is true of all ulcers within, and posterior to the pylorus; and no lesion of this character, either acute or chronic, should be subjected to surgical intervention until a thorough and conscientious effort has been made toward a medical cure first.

The Sippy method, or some modification of this method, is the most reasonable and, I believe, most generally used for the healing of acute and uncomplicated chronic ulcers.

Briefly: The patient is put to bed, absolutely at rest, not being allowed to even flex the body. No food is allowed for a period of

*Read in a sympsium on Peptic Ulcer, before the South Piedmont Medical Society in Lynchburg, Va., November 17, 1925.

forty-eight to fifty-six hours: but water may be given *ad libitum*, if there is no nausea and vomiting. If nausea and vomiting have been present, the rest and fasting usually overcome these symptoms. If not, gastric lavage will almost invariably bring relief. Pain can usually be controlled by the administration of atropine and the application of an ice cap over the epigastrium.

After the second or third day of fasting, feeding should be begun with only a half ounce of milk and cream each, mixed, every hour, beginning at 8 A. M. until 9 or 10 P. M.; increasing this amount by doubling the amount of each, milk and cream each day, up until the third day, when the feeding time should be reduced to every two hours instead of one hour intervals. Sometimes the cream is not so well borne and the proportion of milk and cream should be two of milk and one of cream instead of equal amounts of each. After the fifth day, if all is going well, well cooked and strained cereal, or a jellied egg may be added to the morning and noon feeding, after which the patient can be rapidly brought up to a bland diet of about five feedings a day.

Medication consists of from two to four drams of bismuth subnitrate or subcarbolate, one hour before the first feeding in the morning, and the patient is turned on the right side for twenty or thirty minutes. This is believed to be efficacious in filling the ulcer cavity with bismuth.

Complete alkalinity should be as nearly reached as possible by the administration of a powder composed of ten grains each of bicarbonate and citrate of soda, half hour after each feeding during the day.

No purgatives should be given under any consideration, as healing largely depends upon the inhibition of peristalsis, as far as possible.

A daily enema will usually keep the bowels open, with, in obstinate cases, glycerine, olive oil, castor oil, or sulphate of magnesia added to it.

After three weeks' treatment as above, the patient may be allowed to sit up in bed for a few minutes a day early in the fourth week, and then gradually be brought to ambulant treatment. He should not return to his former occupation within less than three months from the date the treatment was begun, or much longer than that period if his circumstances will permit a further rest from work. Upon discharge from the hospital he should be given a specific dietary to follow, advised that his ulcer is by no means healed yet, that it will take from eight, twelve to eighteen months to accomplish this with his full and careful co-operation; and directed to report for observation by his physician once each week for a period of several weeks, when the intervals can be gradually increased.

To the lay mind, a hemorrhage from the stomach or bowels is the gravest calamity that can overtake one; but in my experience those ulcers that are accompanied by a copious hemorrhage seem to heal as well, or even more readily, than others, provided, of course, there are no further recurrences after the treatment is begun.

After all is said, the successful healing of these lesions depends largely upon the degree of co-operation given the physician by the patient, which, if full and complete, I believe, will insure a cure in from 80 to 85 per cent of duodenal ulcers. As set forth earlier in this paper, no such results can, however, be expected for lesions situated anterior to the pylorus.

204 *Medical Arts Building.*

CHRONIC GALL-BLADDER DISEASE—ITS MEDICAL ASPECTS.*

By WILLIAM J. MALLORY, A. M., M. D., Washington, D. C.

Patients do not present themselves as suffering from gall-bladder disease; they appear complaining of vague gastric disturbance and other symptoms referable to the upper abdomen.

Even when the history and physical examination indicate the gall-bladder to be the source of the disorder and examination by the Graham method reveals positive evidence of gall-bladder disease, the clinical problem is not nearly so simple as it seems.

The roentgenologist himself has pointed out to us that his report should not be accepted as a complete diagnosis, but simply as a statement of his findings in the field examined by that method. Therefore, hower refined and reliable may be the methods used in the examination of one or more organs, it is the physician who should accept the burden of diagnosis and the responsibility of deciding what therapeutic procedure is best calculated to cure.

Before advising a surgical operation for the

*Read before the Medical Society of Virginia, Maryland and District of Columbia, at Washington, D. C., November 18, 1925.

relief of chronic abdominal complaints, the physician should be convinced:

1. That the pathology found is the cause of the symptoms for which the patient seeks relief;

2. That the patient can undergo the operation successfully;

3. That the relief will be sufficient in degree to justify the procedure.

The first requirement, namely, the assurance that the pathology found is the cause of the illness, involves the differential diagnosis from other conditions causing similar symptoms.

Adequate discussion of this subject is not possible in a short paper, but a simple enumeration of some of many such conditions will serve to indicate the complexity of the problem and the necessity of carrying our investigations beyond the field of obvious disturbance.

Of first importance is the separation of surgical diseases from the non-surgical diseases. It is a matter of no regret if we operate for gall-bladder disease and find a duodenal ulcer, chronic appendix or some other condition amenable to surgical procedures. It is, however, a matter of lasting trouble to physician, surgeon and patient if we operate and remove or drain a gall-bladder which, although diseased, still leaves the patient with other surgical pathology, producing symptoms, or some non-surgical disease naturally unrelieved by removal of the gall-bladder, or any other surgical operation.

The following examples are given from my own experience, as an illustration of the diagnostic problems encountered in the management of abdominal disease:

1. Non-surgical diseases producing symptoms resembling acute surgical lesions in the abdomen, but not amenable to surgical treatment. These must be excluded before operating for so-called "acute abdomen."

Apical pneumonia, resembling gall-bladder disease: Pain, tenderness and muscle spasm in the right hypochondrium. Leukocytosis 18,000. No cough, sputum, or pleuritic pain. A search for physical signs of pneumonia was unconvincing. An X-ray examination of both the gall-bladder area and the lung revealed a solidified upper right lobe.

Pericarditis with abdominal symptoms: All studies and examinations inconclusive. An exploratory operation revealed minor pathology which was corrected without relief. Post mortem examination showed pericarditis septic.

Malarial fever, resembling appendiceal abscess: Chills, sweats, temperature curve of the septic type, painful distended abdomen, leukocytosis 17,000; four examinations of the blood for parasites negative; quinine given by mouth without benefit; fifth examination, aestivo-autumnal forms found; recovery under administration of quinine hypodermically.

Lumbricoides in large numbers in the bowel, resembling penetrating gastric ulcer: Acute onset with pain, nausea, vomiting, distention, constipation, moderate fever and leukocytosis; ova found in the feces; recovery after administration of santonin.

Tonsillitis, occurring in a patient under observation for recurrent attacks of appendicitis: Moderate fever, leukocytosis and acceleration of pulse due to local infection and not to acute appendicitis

Typhoid fever, resembling appendicitis: Acute onset with pain, slight rigidity, and tenderness in the lower right quadrant of the abdomen.

Aneurysm of the thoracic aorta, slow rupture into the mediastinal space: Presenting symptoms, epigastric pain, nausea, vomiting, rigidity of abdominal muscles, leukocytosis; death six days later; post-mortem.

Herpes zoster, before the appearance of skin lesions, resembling gall-bladder or appendix inflammation.

Renal colic without stones.

Lead colic, resembling attacks of gall-stone colic.

Miliary tuberculosis, meningeal type: Beginning with pain in the abdomen, rigidity, vomiting, fever and moderate leukocytosis.

2. Chronic or recurrent conditions giving abdominal symptoms, not due to surgical disease and, therefore, not amenable to surgical treatment. These must be excluded before operating for chronic abdominal (surgical) disease.

Tabes dorsalis with gastric crises, and a negative blood Wassermann test.

Spinal arthritis, with referred abdominal pain, rigidity and tenderness; orthopedic diagnosis and X-ray examination; orthopedic appliance relieved all symptoms.

Slight movable right kidney, with mild Dietl's crises; recurrent attacks of "delayed vomiting;" relieved by abdominal support.

Abdominal angina, with recurrent attacks of epigastric pain, recurring, or much worse, after eating.

Angina pectoris, with recurrent attacks of epigastric pain, recurring, or much worse, after eating.

Abdominal aortic aneurysm, with pain recurring in association with the digestive cycle.

Mucous colitis and spastic constipation, with recurrent attacks of abdominal pain, tenderness, nausea and vomiting.

Post pleuritic diaphragmatic adhesions, with epigastric pain, pylorospasm; X-ray evidence of distortion of the duodenal cap from spasm.

Mediastinal disease, peribronchial adenitis, or neoplasm with pylorospasm, epigastric pain, and tenderness.

3. Surgical conditions—chronic,—not amenable to medical treatment, but apt to be overlooked in a surgical operation for demonstrated disease, *e. g.*, gall-bladder diagnosed by X-ray:

a. Epigastric hernia.

b. Umbilical hernia.

c. Incomplete inguinal hernia.

d. Partial obstruction of right ureter.

e. Stone in right kidney without pus or blood in the urine, but having attacks of recurrent abdominal pain, nausea, and vomiting.

f. Dilatation of the duodenum.

g. Meckel's diverticulum.

h. Diaphragmatic hernia.

i. Foreign body in the bowel.

j. Abscess of the dome of the liver.

k. Pericolic adhesions with nausea, vomiting of blood, tense abdomen, fever, and slight leukocytosis, inconclusive X-ray examination; operation for pericolic adhesions—complete relief.

If the physician brings to bear upon the case under consideration his best diagnostic technique, and the surgeon makes a thorough examination of the abdomen when operating for a demonstrated chronic lesion, there will be improvement in practice even with our present knowledge and facilities.

1720 *Connecticut Avenue.*

CAESAREAN SECTION: TYPES AND TECHNIQUE.*

By HOWARD F. KANE, A. B., M. D., F. A. C. S.,
Washington, D. C.
Associate Professor of Obstetrics, George Washington University.

Caesarean section operations are of three types, the so-called classical, the low-cervical, and the extraperitoneal.

The classical, which consists merely of cutting through the walls of the abdomen and uterus, extracting the child and placenta, and suturing the incisions, is the most easily performed of abdominal operations and the simplest operative procedure in obstetrics. Were it not for certain complications and sequelae, this would be the ideal method of delivering women. In view of the possible disastrous consequences of this operation, however, it is a procedure which should be undertaken only in the presence of well-defined obstetrical indications. More important still, it should not be performed except in the absence of contraindications.

The life of the patient may be jeopardized through sepsis and hemorrhage. Convalescence may be delayed and rendered extremely uncomfortable by distention of the stomach and intestines with gas. Late discomfort and danger may be caused by adhesions and by thinning of the uterine walls at the site of the incision. This last condition may lead to rupture of the uterus in a subsequent pregnancy.

The occurrence of infection at the time of operation should be prevented by ordinary attention to asepsis. The possibility of late infection may be minimized by the choice of the proper type of operation. Hemorrhage can usually be easily controlled. The other sequelae mentioned may be lessened in frequency and severity by attention to some of the points emphasized in the technique to be described.

In spite of all precautions, in supposedly clean cases, the mortality ranges from 1.5 per cent in cases operated upon at the beginning of labor to 10 per cent when caesarean section is done after several hours.

A list of the indications for which caesarean sections have been performed would include all the complications of labor, real and imagined. Many times, it is feared, expediency rather than obstetrical emergency, has been the reason for operating. Broadly speaking, abdominal delivery should be resorted to only when

*Presented before the George Washington University Medical Society, April 18, 1925.

the best interests of both mother and child will be served by the procedure.

More important to bear in mind are the contraindications, which vary with the type of operation.

For the classical operation, infection, present or potential, is an absolute contraindication unless the caesarean is to be followed by supravaginal hysterectomy. The number of hours a patient has been in labor and particularly the length of time the membranes have been ruptured constitute contraindications of progressively increasing importance. Pathogenic bacteria are always present in the vagina and lower portions of the cervical canal. Ordinarily, the natural resistance of the patient, aided by the vaginal secretion prevents infection. When the patient is exhausted by a long labor, her powers of resistance are so lowered that they are no longer able to protect her from the bacteria. When the membranes rupture, the flow of alkaline amniotic fluid neutralizes the protective acidity of the vaginal secretion.

It is generally conceded that vaginal examinations add markedly to the danger of classical caesarean section. Much depends upon the care with which these examinations are made. In the series of cases to be reported, probably not more than four or five were operated upon except after one or more vaginal examinations. In practically every instance, however, the vulva was painted with iodine, the patient was draped with sterile towels, the examining hands were scrubbed, soaked in an antiseptic solution, and covered with sterile gloves.

The classical caesarean sections to be discussed in this paper were all done according to a technique which was adopted with a view to the minimizing of distention and adhesions and to the prevention of a weakened area at the site of the uterine incision.

The abdominal incision is made in the midline, above the umbilicus, as suggested by Asa B. Davis, if the pregnancy is at full term. When the fundus does not extend more than four inches above the navel, the incision is made to the right of that point, one-half above it and one-half below. On the distended abdominal wall, the incision is three and one-half to four inches in length, and shrinks to about two and one-half inches when entirely healed. While "a long incision will heal as quickly as a short one," a short one can be sutured much more quickly and leaves a smaller area for the formation of adhesions. The abdominal wall is so thin in this location that it is opened by two strokes. The first goes down to the fascia, which is picked up with tissue forceps, and the second incises fascia and peritoneum, opening the abdominal cavity. This high location of the incision makes adhesions between the uterine and abdominal incisions practically impossible.

If necessary, the uterus is turned so that its midline lies under the incision in order that it may be opened through the area of least vascularity. The abdominal cavity is walled off with two tape sponges wet with salt solution. These sponges are about twelve by three inches and one is placed at each side of the uterus. Care is taken to raise the abdominal walls so that the sponges can be placed without rubbing the parietal or uterine peritoneum.

The uterine incision may be slightly longer than that in the abdominal wall. Through an opening of this size, the baby must be delivered according to the mechanism of a breech extraction through the vagina. One foot is grasped, and by traction the child is delivered as far as the axillae. Then one arm after the other is swept down across the face. Flexion is promoted by pressure on the superior maxillae and the head is pushed through the incision by pressure on the sides of the abdomen by an assistant. The placenta is removed manually and, if any shreds of membrane are retained, the uterine cavity is mopped with a wet sponge. Pituitrin, 1 c.c., is now given intramuscularly. Some prefer to inject this into the uterine muscle. It has not been done in these cases for fear of damage to the uterine wall. The cervix is not dilated from within the uterine cavity. This is considered a dangerous and unnecessary procedure.

As soon as the placenta has been delivered, the assistant hooks one finger into the upper end of the uterine incision and holds the uterus against the abdominal wall. In the lower angle of the incision is placed a suture of twenty-day chromic catgut, No. 2. This embraces the inner half of the uterine wall but does not pass through the decidua. The suture is tied and one end left long to be used as a tractor. A similar suture is placed in the upper angle. These sutures are now used by the assistant to hold the uterus against the ab-

dominal wall. They also help close the incision.

Beginning at the lower end, a continuous suture of No. 2 chromic is placed at the same level as the tractors. When the upper end is reached, it is locked and continued as the outer layer. This line of stitches enters the peritoneum at about 2 mm. from the edge of the incision and goes down to the first row. The end is tied to the first traction suture, thus burying the knot. The outer line of stitches is now covered by a running Lembert suture of No. 2 plain catgut, the end of which is buried by being tied to the upper tractor. This suture may take in only peritoneum, but sometimes it is advantageous to include a few muscle fibres.

During the sewing of the uterine walls, no sponging is permitted. The flow of blood is usually so profuse that sponging, to be of value, must be constant. The sense of touch, with a finger in the uterus, is the best guide to placing the deep row of stitches. After they are in place, the bleeding should not interfere. Constant sponging only traumatizes the peritoneum.

Two layers of sutures are placed in the uterine wall, as it is possible to approximate the two sides with less damage to muscle than if one stitch included all the tissue from peritoneum to mucosa. Care is taken not to pass the needle through the decidua, as the mucous edges should fall together. If the suture included this layer, the edges would be infolded, separate the muscular tissue, and prevent healing.

The peritoneal suture serves two purposes. It helps prevent adhesions by covering all sutures. It also makes the incision water-tight. This is important, as the uterus will be contracting and retracting, squeezing out clots and lochia while the incision is healing. Without the protection of this extra layer, material from the uterus could more easily seep through the wall and enter the peritoneal cavity. Probably one of the chief causes of peritonitis after classical caesarean section is the passage of infection through the uterine incision during the first few days after operation. Polak has shown that during the first week of the puerperium the uterus contains pathogenic bacteria. Peritonitis is caused, not by the spill at the time of operation, but by later infection from the uterine cavity. Continuous sutures are used, as the presence of many knots in the depth of the wound is a source of irritation and a possible cause of faulty healing.

No mention has been made of the uterine "scar." There should be no scar, as the unstriped muscle of the uterus regenerates and the site of the incision should be practically normal muscle. Should the uterine wound become infected, healing by second intention will leave a scar. Rupture of the uterus occurs during a subsequent labor in about 4 per cent of the cases. In nearly every instance there is evidence of symptoms pointing to infection of the uterine incision.

The low cervical caesarean section, or "laparotrachelotomy," devised by Sellheim, introduced into this country by Beck, and enthusiastically advocated by De Lee, permits abdominal delivery in many cases in which the higher operation is contra-indicated.

In this type of operation, the incision is entirely in the lower uterine segment. It is not an extraperitoneal operation but the incision is extraperitoneally situated when the operation is finished. Advantages claimed for this location of the incision are: (1) it is in the non-contractile portion of the uterus and therefore is at rest while healing is taking place; (2) the operative field is in the pelvis where the peritoneum is most resistant to infection; (3) in case of infection from the uterine cavity, the inflammation and suppuration will be confined to the space between the bladder and lower uterine segment and will not invade the peritoneal cavity; and (4) there is less likelihood of adhesions.

Post-operative infection is less to be feared after this type of operation. It is being done after several vaginal examinations, after ineffectual dilatation by bags, and even after attempts at forceps delivery. With this operation in reserve, it is possible to allow longer trial labors with the result that more women will be delivered from below.

In this series of cases, the low cervical method was employed only in those which were possibly infected. Many obstetricians have practically discarded all other types and have adopted this method for all abdominal deliveries. This is because there is less danger of rupture during subsequent pregnancies as the incision is more favorably located for perfect healing.

The technique of low cervical caesarean sec-

tion has recently been clearly described and beautifully illustrated by De Lee.

The method employed in the cases to be reported was as follows:

With the patient in the Trendelenburg position, a median incision six inches in length is made below the umbilicus. A broad retractor is placed in the lower end of the incision after the tape sponges have been placed. At the uterovesical reflexion, the peritoneum is incised transversely almost to the round ligament on either side. The bladder is separated from the lower uterine segment with the finger. If the patient has been long in labor and if the cervix is well dilated, this is easily accomplished as the cervix will have been drawn away from the bladder. The peritoneum above the transverse incision is dissected with scissors up to a point just beyond the upper end of the proposed uterine incision. These flaps, upper of peritoneum, and lower composed mainly of bladder wall, are retracted and a midline incision is made through the lower uterine segment. Unless the head is floating high above the brim, this incision will expose the shoulder, neck, and base of the head. De Lee suggests that the head be rotated by a finger in the child's mouth. Forceps are then applied and the head extracted. The delivery of the head has proved to be the most difficult step of the operation. Several methods have been employed, including version and extraction by the feet. The procedure which has given greatest satisfaction is as follows:

The hand is placed in the uterus and the fingers carried down below the head. The head is then pushed up to the incision. The operator, with his other hand, makes pressure on the fundus while the assistant presses each side of the abdomen from below the sides of the head. The hand in the incision acts in the manner of a shoe horn and the head slips through the opening. The placenta is removed manually.

Most authors state that the bleeding at this step of the operation is less than in the classical type, owing to the fact that the incision is in the thin-walled portion of the uterus. This is also the non-contractile portion, however, and there is no hemostatic aid to be had from the uterine muscles. In these cases, the bleeding has been more profuse than in operations through the fundus. Ordinarily the hemorrhage is not serious and the incision can be closed by sense of touch. When the patient is in a condition which makes blood loss dangerous, the uterine cavity can be packed with a hot sponge.

As soon as the placenta is delivered, the uterine wall on each side is grasped with a volsellum and lifted up into the abdominal wound. The suture is of No. 2 chromic catgut and is placed in two layers, as described for the classical operation. The upper flap of uterine peritoneum is drawn down and sewed to the muscle in three or four places, covering the upper half of the incision. The bladder is brought up and the fringe of peritoneum attached to it is sutured by a continuous Lembert stitch of plain No. 2 catgut from round ligament to round ligament. The bladder now entirely covers the uterine incision, which is also partly covered by the upper flap of peritoneum. When the patient is returned to the horizontal position, this transverse incision lies between bladder and uterus, far down in the pelvis so that it is practically impossible for omental or intestinal adhesions to occur.

The writer has had no personal experience with the extraperitoneal type of caesarean section. It is undoubtedly of value in certain infected cases, but when the uterine cavity is frankly infected, the safest operation for the patient is the classical caesarean followed by supravaginal hysterectomy — the so-called Porro operation.

A Brief Review of One Hundred Cases of Classical Caesarean Section and Sixteen of the Low Cervical Type

Indications for classical caesareans:

22 contracted pelvis
38 cephalopelvic disproportion
16 eclampsia
10 placenta previa (central)
8 preeclamptic toxemia
2 contracted pelvis with cardiac decompensation
1 pelvic obstruction due to dermoid cyst
1 pelvic obstruction due to tumor in vagina
1 short cord
1 inertia with twins.

Of these one hundred cases, five died. Four were cases of eclampsia, and died within twenty-four hours of operation. Almost certainly death was due to the toxemia rather than to the caesarean section. Since adopting means other than operation in the treatment

of eclampsia, the mortality both in eclampsia and following caesarean section has dropped to almost nothing.

The fifth death was in a case of central placenta previa. This patient had undergone amputation of both breasts for carcinoma two years previously and at the time of caesarean showed metastases of nearly all organs, particularly of the liver.

The gross mortality in the series, therefore, is 5 per cent, with no death which was not accounted for by preexisting pathology.

The morbidity cannot be given in this paper except in a general way. Personal post-operative records have not been kept in detail, and exist only on the charts which are scattered among nine hospitals. A temperature of about 100° F. has not been uncommon during the first two or three days, but no case has caused alarm on account of fever.

Post-operative distention has given trouble in very few cases. This may be due to the fact that the operation is done rapidly, thus requiring relatively short anaesthesia, as well as to the avoidance of handling of intestines. The usual length of time for a classical caesarean section, carrying out the above technique, is twenty minutes. Some cases have required more time, and some have been done in several minutes less.

An important factor in permitting a comfortable convalescence is keeping the uterus within the abdominal cavity. The practice of delivering the uterus for incision and suture predisposes to shock from exposure and handling of so extensive an area of peritoneum. It necessitates packing and handling of intestines, thus adding to the likelihood of post-operative gas. It exposes the peritoneum to traumatism which may result in adhesions. With our technique, we rarely see more of the uterus than the narrow area walled off by the tape sponges. Since the use of ethylene as the routine anaesthetic, the amount of nausea and distention has been decreased even further.

In twelve of these cases, the results of subsequent labors are known:

1. Second caesarean. No scar felt or seen. Few omental adhesions to abdominal incision.

2. Second labor normal. Third labor, podalic version. Fourth labor (different operator) podalic version.

3. Second caesarean. Slight thinning at site of incision. Few omental adhesions to abdominal and uterine walls.

Later operation, appendectomy. Dense adhesions to uterine wall. No scar seen.

4. Second caesarean (different operator). Reports no scar. Few very light omental adhesions.

5. Second caesarean (different operator). Reports no scar. Few adhesions.

6. Following labor normal.

7. Second caesarean. Line of incision could be seen. No thinning. Few adhesions. Third caesarean. Rather dense omental adhesions to abdominal and uterine walls.

8. Second caesarean. No scar. No adhesions.

9. Second labor (different operator). High forceps after twelve hours labor.

10. Second caesarean. No scar seen. Slight thinning. Dense omental adhesions to abdominal and uterine walls.

11. Second caesarean, no thinning, no adhesions.

12. Second labor normal.

We know, therefore, that in 12 per cent of the cases the uterine incisions healed satisfactorily and that the operations did not jeopardize the patients in regard to future pregnancies.

The sixteen laparotrachelotomies were done for contracted pelvis or disproportion. Each patient was at least potentially infected and had been in labor for many hours. The shortest labor was twenty-four hours, the longest ninety-six. The average duration of labor was forty-two hours. If we omit a seventy-two hour and the ninety-six hour labor, the average length was thirty-four hours.

In one case, the membranes were intact. In several the time of rupture was not known. The average length of time after rupture of membrane was sixteen hours.

All cases had been examined, many of them several times before admission, and two examined without gloves. All were cases in which the classical caesarean was contraindicated. Had we not had recourse to the low cervical operation, most of the babies would have been killed by efforts at delivery through the vagina.

One patient died, giving a mortality of 6.25 per cent.

She had been in labor ninety-six hours. Before admission to the hospital, high forceps

application had been attempted three times. On admission, the temperature was 103°, pulse 140. She died four days after operation. Autopsy showed the uterus to be almost entirely necrotic. The most interesting point in view of the claims in favor of the low cervical caesarean was that there was a collection of pus between the bladder and lower uterine segment which was kept out of the peritoneal cavity by the transverse line of Lembert suture.

This patient died of septicemia which was undoubtedly present before admission to the hospital. It would have been better judgment had a Porro operation been performed but even that would have probably failed to save the patient.

The most striking fact in regard to this type of operation is the absence of complications and discomfort during convalescence. In no case was there distention sufficient to require treatment. In every case the puerperium was as uneventful as after a normal delivery. During the operation the intestines are never seen. Only a small area of the uterus is exposed. This operation cannot be performed as rapidly as the classical caesarean, our average being thirty-five minutes. One of the patients in this series has since gone through a normal labor.

Conclusions

1. In the absence of uterine infection, the classical caesarean section should be practically devoid of mortality.

2. In the absence of infection of the uterine incision, the uterus should be able to withstand subsequent labors.

3. In the low cervical caesarean section, we have an operation which allows us to give the patient and her baby the benefits of abdominal delivery in many cases where the high operation would be dangerous.

References.

Beck: "The Two-flap Caesarean Section." Surg., Gyn., & Obs., 1921. XXXIII. 290.

De Lee: "Low, or Cervical, Caesarean Section (Laparotrachelotomy)". Jour. A. M. A., 1925. LXXXIV. 791.

De Lee: "History of the Low or Cervical Caesarean Section." Am. Jour. Obs. & Gyn., 1925. X. 582.

Polak: "Pathology of Common Puerperal Lesions." Am. Jour. Obs. & Gyn., 1921. I. 547.

1801 *Eye St., N. W.*

ACHLORHYDRIA—A CLINICAL STUDY OF ONE HUNDRED CASES.*

By DeWITT HAMRICK, B. A.,
and
J. EDWIN WOOD, Jr., M. D.,
University, Va.

The relatively frequent occurrence of achlorhydria either as an ill-defined entity or an associated finding aroused our interest in a clinical study of the condition. One hundred unselected cases of achlorhydria admitted to the medical wards of the University of Virginia Hospital during the past two years have been chosen for study. In our small series we are unable to state the true incidence of this derangement, but it has occurred in about 20 per cent of all cases having gastric analyses during this period. VanderHoof[1] reports 16.2 per cent achlorhydria in gastric analysis done on 500 patients with gastro-intestinal symptoms. He quotes Kelling who found 16.5 per cent anacidity in an investigation of 3,147 cases. Both VanderHoof and Kelling employed the Ewald test meal method. Egglestón[2] gives the incidence of achlorhydria as 10 per cent of 2,730 cases by the fractional analysis method of Rehfuss, and 18 per cent of 2,399 cases by the Ewald method. Hurst[3] investigating 365 cases by the fractional method finds 10.5 per cent achlorhydria. He points out that the Ewald meal is about 9 per cent in error in the detection of achlorhydria, as this method in the same series gave 9.2 per cent greater number of achlorhydrias than did the fractional method. All of our cases were studied by the Ewald method. Fourteen also had fractional tests made, and fourteen others had the Ewald meal repeated. The incidence then of achlorhydria in our clinic may be high on account of the method used, but this is probably not as important as the fact that we have been particularly on the alert for the condition during the past year and cases have been discovered that might not have been found during the routine year's work.

Some interesting views may be found in the literature on achlorhydria, but the etiology and pathological physiology still seem to be obscure. Cabot[4] states that, "Hypoacidity and achylia gastrica are not characteristic of any gastric disease. They are common in alcoholism, in all types of anaemia, in tuberculosis, diabetes, and nephritis, as well as gastric can-

*Read before the Piedmont Medical Society, November 27, 1925.

From the Department of Internal Medicine of the University of Virginia Medical School, University, Va.

ONE HUNDRED CASES OF ACHLORHYDRIA

	No. Cases		Color & Age			Clinical Symptoms						Laboratory Findings			
	Male	Female	White	Colored	Average Age	No Gastric Complaint	Diarrhea	Constipation	Discomfort After Meals	Nausea & Vomiting	Gas & Sour Stomach	+ Degrees Free HCl	Degrees + Total Acidity	Ferments	Amount of Gastric Content
GROUP-I (Cases having a Diagnosis of Achlorhydria only.)	6	8	12	2	48	1	5	2	9	6	4	0	0 to 35	R_o in 4 P_o in 6 & R_oP_o in 4	3-115cc. Av-42cc.
GROUP II* (Cases of Organic Disease with an accompanying Diagnosis of Achlorhydria)	27	34	56	5	47	9	13	9	16	16	11	0	0 to 40	R_o in 7 P_o in 4 R_oP_o in 2	8-133cc. Av. 42cc.
GROUP-III* (Cases with Functional Diseases and Less Severe Organic Disease accompanied by Diagnosis of Achlorhydria)	6	19	21	4	41	0	4	8	10	8	4	0	0 to 47	R_o in 2 P_o in 4 R_oP_o in 1	8-55cc. Av. 28cc
TOTALS —	39	61	89	11	Av. 45	10	22	19	35	30	19				

Anemia, Primary Pernicious - 8 (Cases)
Anemia, Severe Secondary - 5 "
Appendicitis, Chronic - 1
Arteriosclerosis, Gen. - 2
Arthritis, Multiple - 1
Asthma, Bronchial - 1
Carcinoma, Stomach - 5
Catarrhal Jaundice - 1
Cervicitis, Cystic - 1
Cholecystitis - 2
Cholelithiasis - 4
Cirrhosis, Liver - 1
Colitis, Chronic - 4
Cyst, Pancreatic - 1
Eczema, Generalized - 2
Hypertension - 3
Hyperthyroidism - 4
Hypothyroidism - 2
Mitral Stenosis - 2
Mitral Insuff. - 1
Nephritis, Chronic - 1
Obstruction, Intestinal - 1
Pellagra - 3
Polyps, Rectal - 1
Pyelitis - 1
Sepsis, Dental - 2
Syphilis, Tertiary - 1
Tonsillitis, Chronic - 1
Tuberculosis, Chr. Pul - 5
Ulcer, Peptic - 2
Urethra, Acute - 1
Urticaria - 3

Constipation, Chronic - 5 (Cases)
Diarrhea, Chronic - 1
Dysentery - 1
Gastritis, Acute & Chronic - 11
Malnutrition - 1
Neurasthenia - 2
Neurosis - Gastric - 1
Psychoneurosis - 4
Ulcer, Pyloric - 5
Vomiting, Nervous - 2

* The Number of Diagnoses Exceeds the Number of Cases on account of More than one Diagnosis in Same Cases.
\+ The amount of Acidity is Expressed by the Number of cc. of N/10 NaOH Required to Neutralize 100cc. Gastric Contents.
x The Ratio of White to Negro Admissions to Medical Service From 1921 to 1925 is 4:1

cer." Butler[5] believes that, "The total absence of free hydrochloric acid is frequently indicative of a gastric neurosis in hysteria and neurasthenia, is usually one of the findings in the latter stages of chronic gastritis, and is quite an invariable finding in gastric cancer. Achlorhydria is not an invariable finding in gastric cancer as indicated by Hartman,[6] who found that only 69.5 per cent of 551 gastric cancers proved at operation showed a total absence or diminution of hydrochloric acid. According to Fischbein[7] achlorhydria is a gastric neurosis, being either a part of a general neurosis or a symptom. He believes that chronic gastritis as a primary condition, even in cases of alcoholism, is a myth. Albu[8] contends that achylia and achlorhydria are congenital or constitutional with an hereditary factor, since he observed these conditions in thirty-one children under ten years of age. Eggleston[2] has been able to demonstrate achlorhydria in several members of the immediate family of patients suffering from pernicious anaemia. Molnar and Hetenyi,[9] two Hungarian observers, as a result of recent experimentation, conclude that anacidity or achlorhydria is referable to diminished sodium chloride content in the food, and increased excretion of sodium chloride under vegetable diet. In a series of test cases they claim to have found the condition amenable to sodium chloride therapy, or increased sodium chloride in the diet.

Granting the possibility of error as already discussed in the determination of the free hydrochloric acid some explanation should be given for the seemingly high total acid value in our series. Eighty-nine cases had a total acid value in the gastric content of below 20 "acidity per cent," a few being just above (22 to 27 "acidity per cent"). Five cases ranged between 30 and 40 "acidity per cent," three of these being explained by marked stasis with lactic acid formation. Five showed figures above 40 for the total acid and 4 of these were explained by marked stasis with lactic acid formation.

Our cases seem to fall readily into the grouping shown in table 1. Group I—the cases of achlorhydria unassociated with any other condition. If followed over a period of years, such cases eventually fall into one of the other two groups. Group II—the cases of achlorhydria associated with some other organic finding. In pellagra, pernicious anaemia and carcinoma of the stomach a relationship with achlorhydria has long been noted clinically, while in many of the others very little association exists and in some there is apparently none. Group III—the cases included in this group have a diagnosis either of a functional nature or of questionable integrity. The question of chronic gastritis has already been mentioned. In addition to pernicious anaemia, pellagra, and carcinoma of the stomach, certain other diseases seem to warrant notice in association with achlorhydria. These in apparent order of importance are severe secondary anaemia, chronic pulmonary tuberculosis, chronic colitis, hyperthyroidism and cholelithiasis.

Achlorhydria is almost twice as common in women as men, the ratio being notably greater in Group III, where it is three to one. It is twice as frequent in whites as in negroes. Between forty and sixty years seems to be the most likely age period. The oldest and youngest cases in Group I are 64 and 24, respectively, with an average age of 48; in Group II the oldest 78, youngest 20, average age 47; in Group III the oldest 65, youngest 23, average age 41.

Gastric symptoms were absent in 10 per cent of the cases; diarrhea was present in 22 per cent, most often a diarrhea unaccounted for by dietary indiscretions alternating with periods of constipation; constipation severe enough to require laxatives was recorded in 19 per cent; epigastric discomfort coming on from one-half to two hours after meals occurred in 35 per cent of the one hundred cases. This discomfort was of two types, either an epigastric fullness without pain or a localized epigastric pain associated with gaseous eructations and "heart burn." Nineteen per cent suffered from "sour stomach" and "gas on the stomach."

One finds difficulty in selecting from this group of symptoms a complex characteristic of achlorhydria. However, in a person in the fifth decade of life with marked epigastric discomfort after meals, associated with gaseous eructations and nausea, and presenting a history of attacks of diarrhea (more often a morning diarrhea, according to VanderHoof) one should certainly suspect achlorhydria. It is our impression that the majority of cases of achlorhydria, uninfluenced by severe organic disease, occur in thin individuals.

The rather large number of cases (19 per cent), giving a history of "sour stomach" and

symptoms often attributed to hyperacidity, seems to be worthy of notice. Many of the older practitioners are familiar with this and have actually relieved these cases by the administration of soda. Conversely, peptic ulcer cases may show achlorhydria. Sir Berkeley Moynihan[10] found that 13 per cent of 39 gastric ulcer cases showed achlorhydria, and 5½ per cent of 71 cases of duodenal ulcer presented the same condition. Bell[11] gives about the same percentages in a slightly smaller group of peptic ulcer cases.

During the past year, chronic tobacco chewing seemed to be in some cases a very probable factor in the production of achlorhydria (in Groups I and III), twelve of our cases in these groups being chronic tobacco chewers. For a time every chronic tobacco chewer coming into the wards had achlorhydria. However, we have recently seen three patients addicted to this habit over a period of two or three decades and all three showed normal acid values in the gastric withdrawal. This series is too small to hazard an opinion as to the effect of tobacco chewing in the production of achlorhydria.

Conclusions.

1. Achlorhydria is a relatively common condition, occurring in from ten to fifteen per cent of the cases warranting gastric analysis.
2. It accompanies a wide variety of organic and functional derangements and we agree with others that it is probably an associated condition rather than a disease.
3. It is commoner in the white than in the negro.
4. While there is no characteristic symptom complex, achlorhydria may be suspected from the history in a fair percentage of cases.
5. Achlorhydria may produce gastric symptoms commonly attributed to hyperacidity.

References

1. VanderHoof, Douglas: Amer. Jour. Med. Sc., CXLIV:70, August, 1912.
2. Eggleston, C. L.: J. A. M. A., LXXXIII, 260-264, July 26, 1924.
3. Hurst, A. F.: Lancet, I:111, January 20, 1923.
4. Cabot, Richard: Physical Diagnosis. Wm. Wood & Co., N. Y., 6th Ed., p. 362.
5. Butler, G. R.: Diagnostics of Internal Medicine. D. Appleton & Co., N. Y.
6. Hartman. H. R.: Amer. Jour. Med. Sc. CLXIII: 186-190, February, 1922.
7. Fischbein, L.: Boston Med. & Surg. Jour., CLXXXVI:413-418, 1922.
8. Albu, A.: Cited from Nelson's Loose Leaf Living Medicine. Thos. Nelson & Sons, New York.
9. Molnar & Hetenyi: Cited from Nelson's Loose Leaf Living Medicine. Thos. Nelson & Sons, New York.
10. Moynihan, B.: Brit. Med. Jour. I:221, February 10, 1923.
11. Bell, J. R.: Archiv. Int. Med., XXXIII:663-671, November, 1923.

A REVIEW OF THE CHIEF MEDICAL LITERATURE OF NINETEEN HUNDRED AND TWENTY-FIVE.*

By WYNDHAM B. BLANTON, M. D., Richmond, Va.

The entire medical literature for 1925 appearing in the *Archives of Internal Medicine*, the *American Journal of Medical Sciences*, *the American Heart Journal*, and the *Medical Clinics of North America*, with the exception of one volume, has been reviewed, in all 383 articles. Summarizing them, it appears that fifty-six have dealt with gastro-intestinal disease, fifty-four with cardio-vascular disease, forty-nine with the blood, twenty-five with the lungs, twenty-one with the nervous system, twenty with drugs, eighteen with diabetes and the pancreas, sixteen with the liver, thirteen with infections. Other subjects, such as endocrines, immunity, the lymphatic system, cancer, have appeared relatively infrequently. It appears that the heart, blood vessels and blood have invited by far the most attention, representing almost a third of the total medical writings of these journals.

Liver

Sixteen articles have been reviewed dealing with the liver and gall-bladder. Five of these articles have been concerned with the icteric index test of Van den Burg; others deal with the other new functional tests, such as the phenoltetrachlorphthalein test. There are several studies of the bile. The fact that cardiac lesions may give hepatic symptoms is the subject of two papers. In general, functional tests of the liver and the tetrabrom — and tetraiodinphenolphthalein sodium salts tests have been the most productive fields of recent hepatic investigation. Several reports in other journals have dealt with the use of liver extracts in vascular hypertension, and the last issue of the *Johns Hopkins Bulletin* records experiments with liver extract in the reduction of guanidin high blood pressure.

Heart

Of the numerous articles which have dealt with the heart, some of the most interesting

*No foreign journals reviewed.

have discussed coronary thrombosis. The importance and frequency of cardiac infarct have been emphasized. A pain that continues for hours, rapid heart, falling blood pressure, extreme dyspnoea, indicates thrombosis. The necessity of differentiating infarct from angina pectoris is stressed, because sympathectomy for angina pectoris does not relieve the pain of thrombosis and frequently kills the patient. There are several discussions of sudden cardiac death. The most interesting cites eight cases of sudden death in apparently well persons. At autopsy there appeared a most marked syphilitic myocarditis. The curious thing about this type of myocarditis is the prominence of the polymorphonuclear leucocytes rather than the lymphocytes. Under another discussion of the same subject, the chief causes of sudden death are enumerated as (1) rupture of the heart; (2) pulmonary embolism; (3) ventricular fibrillation; (4) heart block; (5) vagus inhibition.

The basal metabolism of heart disease is slightly elevated, due to increased cardiac work with a corresponding demand for more oxygen. Therefore, in the presence of heart disease, slight elevations of the basal metabolic rate have to be cautiously interpreted. It is pointed out that lesions of the left branch of the bundle of His are rare; that vital capacity as a measure of cardiac function is valueless in ambulant cases; and that there are no pathological changes to be noted in the auricles of hearts which have fibrillated. The important fact is brought out that left or right ventricular preponderance can be simulated electrocardiographically by the position of the patient. This casts doubt upon preponderance readings which have not been most carefully taken. The same fact is utilized in diagnosing adhesive pericarditis by the electrocardiogram. In this case the electrocardiogram does not show a change with the change of position by the patient. A great many of the articles reviewed are concerned with the arrhythmias, and, of course, with the electrocardiogram.

Drugs

A surprising number of new drugs are to be found described. There are important papers dealing with the old stand-bys, such as *digitalis* and *morphine*. Intravenous medication is warned against as being hazardous. It is shown that *digitalis* routinely given before operation has no effect in reducing post-operative complications or mortality. It is shown that digitalis does not lose strength with age, but does become less absorbable. Digitalis is not harmful in coronary thrombosis. *Organic iron* has no effect in anemia. The only iron that is potent is the iron content of the food. *Intarvin* is a non-toxic, non-acetone producing, artificial fat, useful in diabetic feeding. Chemically it is margaric acid. *Mercurochrome* continues to receive praise. *Luminal* in doses of one and a half grains is advised to reduce blood pressure. *Urea* (30 to 60 grains daily) effectively removes the edema of cardiac failure. *Barium chloride* (30 grains every four hours) is advised in heart block. *Quinidin* in auricular fibrillation still receives much notice, but there are scattered warnings about its dangers in inexperienced hands. The edema of the orbital tissues and the bulging of the eyes produced by *paraphenylendiamin* (a dye constituent) is pointed out. The rapid fixation of the stomach and the quick fatality that always follows the ingestion of *formaldehyde* is remarked upon. *Tethelin* (anterior pituitary lobe) effects only the blood pressure and not the urinary output of diabetes insipidus. *Magnesium sulphate* by mouth is as effective in gall-bladder and duct draining as when given by duodenal tube. It is claimed to relax the sphincter and not cause a contraction of the gall-bladder. *Lipiodol* is praised for its service in the diagnosis of spinal cord lesions. Again, it is condemned as dangerous. *Ephedrin* is advocated and compared to epinephrin. *Sodium sulphocyanate* is advised in elevation of blood pressure (5 grains t.i.d.). *Calcium chloride* is a good diuretic (15 grains daily). *Tryparsamid* is just beginning to be tried in the treatment of paresis. *Sodium bicarbonate* in excess produces alkalosis with often alarming symptoms —twitching muscles, nausea, vomiting, hiccough, dry skin, edema, vertigo, weakness, drowsiness, coma, death.

Blood

A surprising number of articles have dealt with the various phases of the blood, because there is still so much to be learned about it, and it is, of course, so accessible for examination. Much space is given to the anemias, especially to pernicious anemia. It is compared

to polycythemia, having similar symptoms as weakness, palpitation, and gastro-intestinal disturbances. It may be that both are due to the same thing, affecting the bone marrow differently. Diabetics who have the complication of pernicious anemia are not influenced by insulin. The similarity between pernicious anemia and sprue, with a probable common causative agent, is again brought out. The value of splenectomy in purpura hemorrhagica is emphasized in several papers. There is one unfavorable report. One author presents a rather strong case against transfusion in general, except in cases of hemorrhage and the bleeding of the new born. It is pointed out that there is no anemia in Addison's disease. The claim is made that iron and arsenic are valueless in secondary anemia, transfusion alone being effective. The platelets control hemorrhage, and the interesting point is made that they are low in chronic lymphatic leukemia and in the acute leukemias, thus explaining the tendency to hemorrhage in these conditions. The leucocytes are usually low in jaundice. The X-ray has no effect on the leucocytes of a "tourniqueted" extremity. Enormous increase in the eosinophiles of the blood (50-80 per cent) has been reported in some six or seven cases associated with general increase of the leucocyte count. It is spoken of as eosinophilic leukemia. It is extremely rare. The lymphatic leukemia blood picture may be simulated by Vincent's angina and tuberculosis. Cases are reported with a return of the blood to normal. The very grave dangers of the anemias of pregnancy and the puerperium are set forth. Many interesting studies of blood sugar have been made. On a normal diet the highest blood sugar rise occurs after breakfast. The next highest curve follows supper. Insulin should be given before breakfast (8 A. M.); again at 5 P. M., and at midnight in the severe cases. So important is the blood sugar estimation that it is thought feasible to have patients collect their own blood in oxalate tubes by a finger prick and send it in as they would urine for examination. It has been shown that there are hourly variations in the hemoglobin and size of the red blood cells. The ingestion of three yeast cakes a day is claimed to raise considerably the white cells of the blood (14,000). Beware of the blood count in a patient who has been taking yeast cakes. The icteric index test is valuable in the diagnosis of pernicious anemia.

Blood Vessels

Studies of blood pressure in large groups of normal individuals continue in an effort to better establish the so-called normal age variation. Claims are made both ways for the relation of essential hypertension to nephritis. Venous pressure is being widely studied and methods are being discussed. The prognostic value of venous pressure is stressed. It is asserted that a venous pulse is normal in many people, coming through from the artery. On the other hand, a "regurgitant" venous pulse is said to be a common finding in tricuspid regurgitation and myocardial disease. It is under these circumstances a grave prognostic sign.

High protein feeding in rabbits raises the blood pressure. Guanidin, a catabolic by-product normally excreted in the urine, is now under suspicion as a cause of high blood pressure.

Lungs

Nothing new has been brought out in this field. Cases of syphilis, and primary cancer and actinomycosis are reported. Chronic non-tuberculous infections are discussed. The idea is advanced by one author that pollen in season may cause seasonal bronchitis independent of asthma.

Gastro-Intestinal Tract

One of the best articles of the year is a plea for early diagnosis of cancer of the esophagus with its present 100 per cent mortality. Jackson enumerates the early symptoms—"slight lump in the throat," "tightness in the throat," "a queer feeling in the throat"—symptoms usually put down to globus hystericus. The hope of this class of person lies in the early use of the esophasgoscope—may be the X-ray.

Neutral red given by vein or hypodermic is secreted by the stomach. It is therefore advocated as a test of gastric function. There is said to be no secretion in anacidity. Test papers are recommended in gastric analysis. Gastric juice is antiseptic in proportion to its acidity. The acidity of the stomach at different levels, as determined by two tubes, is fairly constant. This is at variance with previous reports. The high blood urea findings in intestinal obstruction are important

observations. Interesting symptoms are reported following the release of obstruction,—temperture. gain in weight. and diarrhoea with many cellular elements in the stool. Ulcer is responsible for much of the space given over to gastro-intestinal diseases. It is said that ulcers complicating skin burns are rare (5 per cent). When is an ulcer cured? Neither the X-ray nor laboratory tests can settle it. The surest test is the continued absence of symptoms. Stress is still laid on the superiority of medical to surgical treatment in most cases of ulcer. Dental infection is claimed as the chief cause of ulcer. The theory that the pain of ulcer is due to gastric motility is rebutted. A balloon in the stomach is used to demonstrate gastric motility. Soda does not relieve by reducing motility but by neutralizing acid. It is claimed that nausea is entirely a phenomenon of the duodenum. The ingenious device is advised of testing gastric acidity by following the alkaline tide of the urine. The colon has received much attention. A Gram+ diplococcus is reported from the Mayos as the cause of ulcerative colitis. Much colitis is of amoebic origin. Giardiasis is a common finding. It is pathogenic. Trichomonas is said to be non-pathogenic. Syphilis is rare in the gastro-intestinal tract.

Diabetes and the Pancreas

The urine is not a reliable guide in the diagnosis or treatment of diabetes. Insulin is non-effective in certain individuals. In others, it may do harm. The amount of glucose used in the glucose tolerance test should be calculated on the basis of the body weight and the surface in childhood. The frequency of gall-stones in diabetes leads to the theory that they are causative, mechanically affecting pancreatic drainage and promoting pancreatic infection. Diabetic coma is discussed as an unnecessary complication, and it is pointed out that, though recovered from, it leaves the diabetic permanently injured, especially in the lowering of his carbohydrate tolerance.

Endocrines

The thyroid holds the field. Iodine in prevention, in treatment, and as a danger in toxic adenoma is brought out. The Kottmann reaction is advocated as a test of thyroid activity. The fatigued man of low blood pressure, subnormal temperature, slow pulse, increased leucocytes, irritable and depressed, often shows thyroid deficiency by the calorimeter, and improves on thyroid extract.

Metabolism

Emotional reactions greatly vitiate metabolic determinations, and have to be carefully guarded against in interpretation.

Nervous System

Of the several articles on this subject the most significant is the suggestion of a ketogenic diet in epilepsy (C., 10-15 gms.; P., 1 gm. per kilo; F., up to caloric needs). A valuable discussion of facial pain occurs. The atypical facial neuralgias are defined as showing no typical nerve distribution, remaining unchanged for months or years, being deep seated and unilateral. They are to be sharply distinguished from tic douloureux. There are the usual contributions to the literature of headache, vertigo and nystagmus. The last issue of *Brain* carries an interesting article on "Hepatico-Lenticular Disease"—a curious association of lesions in the liver and lenticular nucleus.

Infections

There are several reports of tularemia—a disease conveyed to man from the rabbit. The leptospirilla of the Japanese is described in several (2) cases of icterus, with fever. Rheumatism is the subject of several papers. Rest in bed is stressed and post-febrile sanitarium treatment advocated. Oxygen appears to be coming back in the treatment of pneumonia. Gentian violet and mercurochrome intravenously are advocated in septicemia. Bismuth is a useful drug in syphilis, but the uncertainty of the whole treatment of Lues is emphasized, because a negative Wassermann is not reliable as an index of cure.

Arthritis

Despite the value of drugs, vaccines, proteins, diet, the physical treatment is by far the most important. This embraces the employment of heat, light, electricity, hydrotherapy, massage, and exercise. Backache and an underlying arthritis demand the use of the X-ray in diagnosis.

Cancer

There is relatively little on this subject. One sarcoma of the heart is reported. Blood sugar tolerance tests are declared to be of no value in the diagnosis of neoplasm. Empha-

sis is placed on diagnosis in the precancerous stage—whatever that may connote. Asthenia and anemia in the middle aged, even without gastro-intestinal symptoms, demand an X-ray of the stomach or an exploratory operation. The backache of abdominal Hodgkin's is relieved by the X-ray, but these cases with arthritic spinal changes do not show any bony improvement after deep X-ray therapy.

Spleen

A few articles of no great value.

Kidney

It is suggested that the normal digestive products (amino acids) may be a source of renal injury—a cause of nephritis. Many authors are still classifying nephritis. Mercurochrome by vein is advocated in pyelitis. The pyogenic kidney is usually of hematogenous origin. B. coli is not primary. Pyelonephritis is the pathological finding. Cases are pointed out simulating the laboratory findings of nephritis. The urinalysis is still the most valuable aid in kidney diagnosis.

Skin

Eczema is often caused by focal infection. Five to ten per cent of the students of the University of Pennsylvania show ringworm of the feet (soft bunion). Radium is to be preferred to the X-ray in the treatment of all skin diseases. The study of the distribution of the hair and the pigmentation throws much light upon disease, especially certain types of endocrine disturbance.

Tetany

It is maintained that tetany is an intoxication brought about by nitrogen by-products and that calcium and acid-base disturbances are secondary.

300 *West Grace Street.*

COMPLICATIONS OF TONSILLECTOMY.

By G. B. GILMORE, M. D., New York, N. Y.

That the removal of tonsils is far from a simple procedure is evidenced by the rather frequent reports of serious complications that may follow. This is not a plea for fewer tonsillectomies on the ground of complications but another attempt to emphasize the fact that a tonsillectomy is a major and a hospital operation. Too many tonsils are being removed outside of well-equipped operating rooms, without adequate light, improper and often prolonged anesthesia, and with untrained assistants. These factors lie at the bottom of the great majority of serious sequelae.

The first complication that always comes to mind is hemorrhage, either primary or post-operative. Danger of wounding the internal carotid is largely a myth as it normally lies 15 to 25 mm. away and is separated from the tonsil by the pharyngeal aponeurosis, muscles and loose areolar tissue. Deaths have been reported when this vessel assumes an anomalous course and is injured, resulting in a fatal hemorrhage.[1] The condition is rare as is also the danger of wounding the lingual and external maxillary when in abnormal positions.

If all bleeding points are crushed with clamps or tied according to Coakley's[2] method, the patient will leave the operating room with the fossa dry and no post-operative hemorrhage will be anticipated.

Hemophiliacs give a very troublesome and generalized bleeding, but we can be forewarned if a clotting time is taken on all cases and treatment given those showing a coagulation time of over 5 minutes. (Biffi-Brooks coagulation test.)

The question of post-operative lung abscess and broncho-pneumonia has brought about much discussion as to the merits of local over general anesthesia in adults. It is now an accepted fact, I am glad to say, that we run less chance of lung infections after local than with general anesthesia.

Under general anesthesia the simplest explanation of the above complications is aspiration of infected blood, mucus or cheesy material from the tonsils into the tracheobronchial tree. That this is not the sole cause has been brought out by Myerson[3] who holds that prolonged anesthesia causes injury to the bronchial tree or an inhibition of its expulsive power. In 200 cases examined post-operative, he found that 155 showed blood and mucus in varying quantities in the tracheobronchial tree, clearly showing some loss of expulsive force. This would certainly seem to favor subsequent infection.

Champions of general anesthesia point out that lung abscess follows a tonsillectomy under local. That this does occur no one can question, but it is unusual and extremely rare. It is brought about, and the same thing can

occur after a general anesthetic, by infected thrombi in the veins of the tonsillar fossa floating off into the circulation and lodging in the lung. This gives rise to a septic infarct which breaks down and suppurates. Inability to keep the throat at rest favors this occurrence.

Chamberlin[4] brings out the possibility of carrying infection into the deeper structures surrounding the tonsil capsule when injecting a local anesthetic. The result of this is a deep cervical abscess. I have had such a case, developing a large abscess which eventually pointed at the lower angle of the fossa, in which I am positive the point of the needle went through infected tonsillar tissue and carried bacteria to the deeper structures. To obviate this very painful complication, we should keep away from the tonsil and infiltrate around it in the loose tissue surrounding the capsule.

Ear complications following tonsillectomy can vary from an acute tubal congestion to a purulent otitis media with its frequent complication, acute mastoiditis. Mutilation of the tissues in the throat, coupled with the close proximity of the Eustachian tube orifice, are the etiological factors here. Gentleness and the completion of the operation with a minimum amount of trauma will avoid the above.

That bacteriemia can follow tonsil enucleation is shown by Dabney[5] in a recent paper. This would be of more frequent occurrence but for the fact that the operation does not as a rule break down the patient's resistance. In Dabney's case the patient was non-resistant from rather severe hemorrhage, so the body was easily overpowered by a large number of organisms liberated into the blood stream during the operation.

Reports of post-operative diphtheritic infection superimposed upon the grey slough covering the tonsil fossa are reported in the literature. The general symptoms, together with the fact that the membrane creeps beyond the tonsil bed, will put us on the right track in the diagnosis.

Just a word with regard to sudden death in cases of status lymphaticus. That this occurs in tonsil work can only point to the fact that the patients are operated upon without a previous physical examination.

BIBLIOGRAPHY.

1. The Carotid Arteries and Hemorrhages of the Tonsils. Paris letter, *Journal A. M. A.*, 76: 532 (February), 1921.
2. Coakley. Diseases of the Nose and Throat. 1922, p. 385.
3. Myerson, M. C. Lung Abscess Cured by Bronchoscopy. *Arch. Otol.*, 2:2. (Aug.), 1925.
4. Chamberlin, Wm. B. The Possible Means of Preventing Deep Cervical Abscess. *Journal A. M. A.*, July 11, 1925.
5. Dabney, V. Bacteriemia Due to Tonsillectomy Complicated by Mastoiditis. *Arch Otol.*, 2:4 (Oct.), 1925.

2940 *Grand Concourse.*

Proceedings of Societies

MEDICAL SOCIETY OF VIRGINIA.

Report of the Legislative Committee.

I herewith submit my report of the activities of the Legislative Committee during the recent session of the Legislature:

The Chiropractors made an attempt to have the Legislature create a separate examining board for the chiropractors. Their bill was introduced early in the session. I at once called a meeting of the Legislative Committee, which was held in the Secretary's Office at Richmond. A number of representative doctors were present. The Committee instructed me, as Chairman, to oppose the Chiropractic Bill. This bill was heard before a joint meeting of the General Laws Committee of the House and Senate. Hon. Harris Hart, Superintendent of Public Instruction, Dr. F. W. Boatwright, President of the University of Richmond, Dr. J. A. C. Chandler, President of William and Mary, and Dr Ennion G. Williams, State Health Commissioner, appeared before the Committee. Doctors Chandler, Boatwright, and Mr. Hart each made splendid talks against the bill on the ground that it lowered the standard of education in Virginia, pointing out that above all things, the standard of medical education should be high, that the health and lives of the people of the State might be protected. Their talks were most convincing to the Committee.

Dr. Williams made a most excellent talk against the proposed bill, stating that the high standard of education in Virginia, both general and medical, had enabled the State Health Department to reduce the percentage of mortality in contagious and infectious disease to a very low percentage This, he stated, was

accomplished largely through the educated and trained doctors throughout the State.

Doctors J. Shelton Horsley, J. Allison Hodges, and A. M. Willis, also spoke before the Committee.

The Committee was very attentive to the argument from both sides.

The Committee went into executive session and refused to report the bill out. The bill was referred to a sub-committee of three. At the next meeting, the sub-committee reported that the bill be passed by indefinitely. That, of course, meant the bill was killed. The following morning after this report another Chiropractic Bill was introduced, and referred to the Committee on General Laws. This bill also was referred to a sub-committee and was considered by them, the sub-committee reporting that the bill be passed by indefinitely, again killing the Chiropractic Bill.

Then it was that Mr. Wright, delegate from Roanoke, and a member of the General Laws Committee, wrote a bill having the same purpose as the original bill; that is, creating a special board of examiners for the chiropractors, and adding very strict educational requirements. In his bill, he did not change the year of exemption. This bill, of course, did not suit the Chiropractors. However, they were told that it could be amended on the floor, and with this hope, the bill was passed out of the Committee. I did not attempt to secure a hearing on this particular bill, as I had been assured of the fact that there was no chance of a Chiropractic Bill passing the House of Delegates.

When the bill came up on its second reading, on motion to dispense with the constitutional reading, it was killed by a vote of thirty-eight to thirty-nine, the law requiring four-fifths of the members voting to dispense with the constitutional reading. This vote was taken in the afternoon. At the session of the Legislature that night, the Chiropractic advocates attempted to take up the bill again. This was objected to on motion of Mr. Jones, of Richmond, to dismiss the bill from the calendar, the bill was dismissed on a vote of twenty-six against dismissing, and forty-one for dismission. This was about the strength of the Chiropractors in the House in the last Legislature.

After the bill had been practically killed, that is, several days before the bill was dismissed from the calendar, several members of the Legislative Committee and other doctors who were present, suggested the idea of putting a Chiropractor on the Medical Examining Board, several of the Committeemen present believing that the Chiropractors should be represented on the Board as the osteopaths were. This, I agreed to, with the understanding that the bill creating an examining board for the Chiropractors had been killed.. Dr Kendig, who is a member of the Senate, introduced the bill, placing a Chiropractor on the Board, at the request of the Committee. The bill passed the Senate unanimously, but there was considerable objection to a Chiropractor being put on the Board by some members of the Examining Board and a number of doctors. I received a number of protests against the bill being enacted into law. I, at once, called the Legislative Committee together. The majority of the Committee present at the meeting agreed that a Chiropractor should be put on the Board. However, as it was not understood in the beginning of the session of the Legislature, nor had it been discussed at any meeting of the Medical Society, the Committee decided that the matter should be considered by the Medical Society, first. Thereupon, the Committee instructed Senator Kendig to have his bill pigeon-holed in the General Laws Committee of the House. This, Dr. Kendig, assured them he would do and the bill was passed by indefinitely in the Committee on General Laws in the House.

The laws governing the practice of medicine in Virginia were not changed during the last session of the Legislature.

I want to thank the Doctors of the State for their enthusiastic co-operation and the Medical Societies of Staunton, Norfolk County, and Richmond City, for their assistance in the recent fight. I also want to thank the *Times-Dispatch* and the *News Leader*, of Richmond, for the splendid editorials upholding the standard of medical education in Virginia and their manly attack against creating a separate examining board for the Chiropractors.

H. U. Stephenson, *Chairman*,
Legislative Committee,
Medical Society of Virginia.

The Southside Virginia Medical Association

Met in Suffolk on March 9th, with a large attendance. A good program was rendered and free discussions were entered into by both members and visiting doctors. After a most enjoyable dinner at the Hotel Elliott, the meetings adjourned to meet in Farmville on the second Tuesday in June.

Dr. F. C. Rinker, Norfolk, is president, and Dr. R. L Raiford, Sedley, secretary.

Rockbridge County Medical Society.

At a called meeting of this Society on March 22, Dr. E. P. Tompkins, of Lexington, was elected secretary to succeed the late Dr. B. W. Switzer. Dr. Robert Glasgow, also of Lexington, is president.

The Truth About Medicine

THE TRUTH ABOUT MEDICINE

In addition to the articles enumerated in our letter of January 30, 1926, the following have been accepted:

Lederle Antitoxin Laboratories
- Ragweed Combined Pollen Antigen—Lederle

H. K. Mulford Co.
- Lamb's Quarters Pollen Extract—Mulford Fourth Series
- Ragweed Pollen Extract (Fall)—Mulford Fourth Series
- Timothy Pollen Extract (Spring)—Mulford Fourth Series
- Wormwood Pollen Extract—Mulford Fourth Series

Swan-Myers Co.
- Elm Concentrated Pollen Extract—Swan-Myers
- Yellow Dock Concentrated Pollen Extract—Swan-Myers.

NEW AND NON-OFFICIAL REMEDIES

Concentrated Pollen Extracts—Swan-Myers. In addition to products listed in The Journal, May 30, 1925, p. 1634, the following have been accepted: Bermuda Grass Concentrated Pollen Extract—Swan-Myers; Costal Sagebrush Concentrated Pollen Extract—Swan-Myers; Elm Concentrated Pollen Extract—Swan-Myers; Johnson Grass Concentrated Pollen Extract—Swan-Myers; Redroot Pigweed Concentrated Pollen Extract—Swan-Myers; Sunflower Concentrated Pollen Extract—Swan-Myers; Sweet Vernal Grass Concentrated Pollen Extract—Swan Myers; Yellow Dock Concentrated Pollen Extract—Swan-Myers. Swan-Myers Co., Indianapolis. (Jour. A. M. A., February 27, 1926, p. 625).

PROPAGANDA FOR REFORM

Antistreptococcus Serum.—For some years the Council has been questioning the value of antistreptococcus serums. These products have been retained in New and Non-official Remedies with the caution that on the basis of clinical reports there is perhaps justification for the use of the serum in streptococcus infections, but that there is no scientific basis for it. In consideration of a report prepared by Dr. Emil Novak, on the basis of a questionnaire sent to a number of surgeons, gynecologists and obstetricians, the Council voted to retain antistreptococcus serum preparations in New and Non-official Remedies provisionally. (Jour. A. M. A., Feb. 6, 1926, p. 417).

Florence Formula.—Florence Formula is another of the numerous alleged cures for hayfever and asthma sold on the mail-order plan. It is put out by the Florence Products Corporation, Kansas City, Mo. The A. M. A. Chemical Laboratory reports that the "Florence Formula for Asthma, Bronchitis, Catarrh, Short Breath, Hay Fever and Allied Ailments" consisted of mottled, grayish white tablets and that each tablet contained the equivalent of approximately 0.18 Gm. of potassium iodide and 0.0007 Gm. of arsenic trioxide (equivalent to one minim of "Fowler's Solution"). From this analysis it is seen that the Florence Formula has essentially the same composition as another Kansas City Medical mail order humbug "Asthma Tabs" examined in the Association's Laboratory. (Jour. A. M. A., February 6, 1926, p. 435).

Sanocrysin.—In spite of the disappointing results from the use of "Sanocrysin" in animal tuberculosis in the careful experiments carried out for the Hygienic Laboratory by Theobald Smith, Wm. H. Park and E. C. Schroeder, it is possible that some renewal of interest may arise as a result of recent papers by European physicians on the use of sodium-gold thiosulphate in human cases of tuberculosis. One naturally views with doubt the value of these reports, since these physicians have discarded the theories originally advanced and, to a large extent also, the use of the antitoxic serum. They thus place the substance in the category of the gold salts used in the therapy of tuberculosis with which a long record of varied experiences is available. It is possible that the use of gold may have some value, but there is no evidence at hand today; hence the wisdom of American physicians in awaiting definite proof of action in animal tuberculosis before using it in the human disease will save much suffering and distress. (Jour. A. M. A., Feb. 13, 1926, p. 487.)

National Health Service.—Some time ago the United States Public Health Service issued a warning that the "National Health Service," Washington, D. C., was attempting to capitalize the research work done by the United States government and to confuse the public into believing that it was in some way identified with the Public Health Service of the government. The offices of the National Health Service are no longer in Washington, D. C., but in New York City. The concern is either operated from two addresses—17 West Sixtieth Street and 70 Fifth Avenue—or there are two concerns of the same name. From the first address a so-called "Book of Health," a urinalysis "health service" and a line of fad foods are sold. From the Fifth Avenue address letters are sent to industrial concerns urging them to purchase "a remarkable discovery for kidney disease, which has produced unbelievable results even in extreme cases where all other means have failed." An analysis of Rensano, made in the A. M. A. Chemical Laboratory, confirmed by pharmacologic tests, carried out at the University of Illinois, showed that Rensano is essentially milk sugar with a minute amount of alcohol. This inert and therapeutically worthless product is exploited to individuals and industrial plants with the suggestion that working men suffering from such serious conditions as nephritis and diabetes should be given this product in lieu of medical attention. (Jour. A. M. A., Feb. 13, 1926, p. 502).

Formaldehyde Fumigators.—The term "solidified

formaldehyde" is used loosely, sometimes denoting dry paraformaldehyde, but more generally denoting a solidified mass of soap, tallow, or such substance with formaldehyde. When paraformaldehyde is heated formaldehyde and some sublimed paraformaldehyde are given off. The amount of formaldehyde yielded depends on a number of conditions. In the case of solidified formaldehyde, the concentration of the formaldehyde and the amount of vapor evolved must be known to judge its efficiency. Fumigation as a means of preventing the spread of disease is regarded as far less important than formerly. (Jour. A. M. A., Feb. 13, 1926, p. 505).

Acacia and Intravenous Injections.—The harmfulness of acacia in the treatment of shock and hemorrhage has been pointed out repeatedly. The changes resulting from the use of this otherwise inert agent bear on the many-sided question of intravenous therapy. The investigations of Hanzlik have shown the wide changes which occur in the blood and tissues. Confirmatory of the work of Hanzlik, it was found that the blood after injection of acacia is definitely altered. The danger of intravenous injection of acacia has been fully demonstrated. The warning against acacia may be extended to other blood substitutes and in fact to intravenous injections in general. (Jour. A. M. A., Feb. 20, 1926, p. 556).

Inner-Clean.—Inner-Clean (Inner-Clean Manufacturing Company, Los Angeles) is claimed to assist nature and "Progressively and Thoroughly Cleanses and Rejuvenates Relaxed, Flabby Intestines." Those who order Inner-Clean by mail are sent in addition to the preparation, a leaflet advertising the "Mucusless-Diet Healing System." The "system" apparently is a book which sells for $1.50. Examination of Inner-Clean in the A. M. A. Chemical Laboratory showed the product to be essentially a coarse herb mixture (with a little sand), consisting mainly of Senna leaves. (Jour. A. M. A., Feb. 20, 1926, p. 570).

Administration of Mercury and Arsphenamine.—The arsphenamines are so reactive that they may not be combined in solutions with mercury salts for intravenous administration. Alternation of drugs, rather than simultaneous administration, is the present trend of antisyphilitic medication. Mercury compounds administered intravenously should be given more frequently and over a longer time than is permissible for the administration of arsphenamine in sufficiently large doses. Furthermore, it is generally advisable not to give intravenous mercury medication, but to employ the forms such as the insoluble salts (or certain soluble salts), intramuscularly or to apply inunctions. (Jour. A. M. A., Feb. 20, 1926. p. 572).

Pertussin.—The reason the medical profession should refuse to prescribe Pertussin is not primarily because the stuff is advertised to the public, but that it is a product of indefinite composition, marketed under a nondescriptive therapeutically suggestive name, and is exploited with misleading claims. Pertussin is one of many proprietaries which has been popularized through the uncritical testimonials given the physician. (Jour. A. M. A., Feb. 20, 1926, p. 573).

Glucose-Dextrose.—Legislation now under consideration in Congress aims to modify the interpretation of the Federal Food and Drugs Act so that food products shall not be deemed adulterated or misbranded "because of having been preserved or sweetened with an article commonly known as corn sugar, also with an article known as fruit sugar or levulose." From the standpoint of nutrition and health, no reasonable objection can be offered to this proposal. It should be emphasized that in the new pharmacopeia "glucose" connotes the syrupy substance; the pure substance such as is used for treatment of hyperglycemia following a large dose of insulin is now described under the name dextrose (sometimes called d-glucose; formerly described also under the name anhydrous glucose). This may lead to confusion, as many physicians still speak of "glucose" injections, which under the new pharmacopeia are really "dextrose" injections. (Jour. A. M. A., Feb. 27, 1926, p. 628).

Burgess-Johnson-Webb Syndicate of Frauds.—On February 11, 1926, the Postmaster-General issued a fraud order against a group of medical mail-order swindles conducted by Ward H. Webb, W. W. Burgess, and Linn D. Johnson, who conducted the Gray Advertising Agency, Kansas City, Mo. As the Dale Laboratories they sold "Virex," a fraudulent cure for deafness, a fake cure for "stomach trouble"—"Dale's Wonderful Stomach Remedy"—and a kidney cure humbug, "Dale's Kidney Prescription." Under the trade name of King's Laboratories they sold a pyorrhea cure swindle. As the Hilton Laboratories they sold "Hilton's Vitamines to Make You Fat." As Warren Laboratories they sold "Clear-Plex" and other fake beauty preparations. As the Webb Chemical Co., they sold a fraudulent cure for asthma, the "Famous Webb Combination Prescription." As Walker Institute, they sold "Walker's Prostate Specific," exploiting those with prostate trouble. As the Restorex Company, they sold "Restorex Tablets," a weak-man remedy, while they sold a fake rheumatism cure—the "3-Way Combination Treatment," under the name of the 3-Way Chemical Company. These are but a few of the twenty-seven schemes operated through the mails by this group. The Solicitor's memorandum shows that the preparations were made for them by George A. Breon & Co., of Kansas City. It was brought out that Burgess, Johnson and Webb had no medical training, and none of the "laboratories" were laboratories in fact. (Jour. A. M. A., Feb. 27, 1926, p. 641).

Cod-Liver Oil Emulsion.—As a short period of aeration at a low temperature does not lead to destruction of either vitamin A or vitamin D (the antirachitic vitamin), it is safe to say that emulsified cod-liver oil is equal in vitamin potency to the unemulsified.

Recresal.—It is claimed to be: "Highly efficient, corroborative for the sick, convalescents and those in need of recreation," and "Specially recommended in cases of weakness and exhaustion of a physical and psychic nature, in bodily and mental overstrain; indispensable for the preservation of the tone of muscles and nerves." Tests made in the A. M. A. Chemical Laboratory show that sodium acid phosphate is the essential constituent. Therefore, the claims made for the product are preposterous. (Jour. A. M. A., Feb. 27, 1926, p. 645).

Book Announcements

International Clinics. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Medicine, Surgery and other Specialties. By Leading Members of the Medical Profession Throughout the World. Edited by HENRY W. CATTELL, M. D., Philadelphia, with Collaborators. Volume 1. Thirty-sixth Series. 1926. Philadelphia and London. J. B. Lippincott Company. 1926. Cloth. 309 pages. Price of set, $12.

Virginia Medical Monthly

FOUNDED BY LANDON B. EDWARDS, M. D., APRIL, 1874.
OWNED BY THE MEDICAL SOCIETY OF VIRGINIA.
PUBLISHED BY THE PUBLISHING COMMITTEE.
A. G. BROWN, Jr., M. D., Chairman, Richmond, Va.
B. R. TUCKER, M. D., Richmond, Va.
P. W. HOWLE, M. D., Richmond, Va.
E. L. KENDIG, M. D. Victoria, Va.
A. L. GRAY, M. D., Richmond, Va.
ALEX. G BROWN, Jr., M. D., Editor.
AGNES V. EDWARDS,
Business Manager and Secretary-Treasurer.
All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal.
All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.
Subscription Price: $2.00 per annum in advance.
Single Copies 20c.

Vol. 53. APRIL, 1926 No. 1

Editorial

Damaged Hearts and High Blood Pressure.

Hearts may be damaged before high blood pressure. Hearts may be damaged after high blood pressure. Hearts may be damaged in part before and in part after. Factors operating within the body for a prolonged period of time, producing a state of hypertension in the arterial stream, damage either the crippled or previously normal heart. This is necessarily true because the heart is a chief actor in the make up of blood pressure. Physiologic blood pressure is produced by the (a) pumping action of the heart, (b) resistance of the arterioles and capillaries in the periphery, (c) elastic recoil of the blood vessel wall, and (d) amount of blood volume. Heart force and ventricular strength must be increased in states of hyper-arterial-tension. If the heart is normal at the primary stages, it becomes damaged, as time goes on, by the added work alone required, if not from other important associated conditions. If the heart is already defective either in its valve function, its muscle function, or its "private" circulatory function, increased arterial pressure, and the "things" that go along with it, make a damaged heart act up in the syndrome prominently in the hypertension case. The central pumping station necessarily receives added work with each contraction when the resistance has been increased by obstructive factors in the peripheral capillaries, and when, besides, the rigidity of the vessel wall has been tightened. At once this means, in increased tension, that the heart, pumping the same amount of blood, has performed extra work. Overwork, constantly produced, brings about damage and distressing terminal stages. This group of cardiopaths inevitably come to the internist and general physician for relief during the advanced or final stages of chronic arterial tension.

High blood pressure may present itself in three types: Essential hypertension, nephritic hypertension, and arteriosclerotic hypertension. Writers of texts and of current literature do not agree on the matter of classification. If agreement were arrived at probably so many exceptions could be cited to discredit the verity of the classification, that it is hardly worth while to attempt to say that each case can be assigned to one or the other of this or that group. But for our purposes we may say that essential hypertension is that sort of high blood pressure to which neither the arterial wall or the kidney contributes gross or discoverable changes. This form of increased blood pressure may arise, possibly, from the action of the pathologic elements in the blood stream itself acting upon the fine blood vessels in the field of outlying circulation. The retention of excessive blood metabolites may produce spasm or cramp in the delicate arterioles, and, thus kick-up too great a degree of resistance. Heart action is met by this breakwater of resistance and in time, tension is raised by virtue of the increased pumping force of the heart, and by the spasm of the arterioles and resistance of the periphery with an equal volume of blood circulating. In chronic nephritis it is rather easy to see a relationship to arterial tension. Pathology in the kidney, involving the vascular and the tubular structures of this organ, brings about sclerotic changes which involve the entire arterial system. Such cases of hypertension are cardiopaths as well. In arteriosclerotics also one finds high blood pressure, although the kidney function may not be demonstrably impaired in some, and the signs of kidney degeneration, commonly found in urine examinations, may be deficient. The vessel wall is palpably hardened and thickened. The tension is high. The heart in such cases is very likely to participate in the pathologic process and furnish symptoms suddenly and irrevocably bad.

Damaged Hearts of Hypertension.

1. Angina Pectoris

The syndrome of angina pectoris may occur and does occur without arterial hypertension. The arterial pressure may be low in angina pectoris. But hypertension cases often have damaged hearts which show dramatically the serious cardiac syndrome of angina pectoris; these anginal attacks often end disastrously. The hypertension case may present suddenly the symptoms of angina, to-wit, pain in the chest behind the sternum, radiating across the chest and down the left arm, and a sense of intense alarm and fright. This is angina pectoris. This pain crisis may occur without or following exercise, exertion or excitement. The attack becomes immediately all absorbing and critical. The grip of the breast pang comes with a mental alarm of extreme intensity. Yet the attack may be more subtle and not so characteristic. The pain may be retrosternal but not so terrific; none the less significant, however. Again, the pain may cross the chest, radiating to both arms and backward transfixing the thorax with a three-way pain which cuts short the breath and terrifies the patient. One must be wise to the vagaries and humors of the pain of angina because this symptom is the master actor in a tragic part. The syndrome, physicians know, may follow the most insignificant incident. One writer has spoken of "angina of effort" and "angina of decubitus." It does not appear that it is important to determine whether the attack is one of effort or of decubitus. For a damaged heart that gives a display of symptoms of such as are found in angina pectoris, whether from effort, or while the body is prone, is far away along the path of advanced diseases. If an effort produces a heart pang or if the attack comes on while the patient is in bed, the heart damage, in the face of hypertension especially, is extremely grave. These damaged hearts exhibiting angina pectoris associated with hypertension have pathology of more or less varied assortments. Commonly, however, clinicians agree that aortitis and sclerosis exist. To this myocardial changes have an important association. The ventricle walls hypertrophy and dilate and undergo degeneration. Aortic valve lesions and sclerosis of the aorta have also a place in this pathology; the coronaries are "shot."

Physical findings may or may not elicit heart murmurs. The action of the heart may not be grossly altered. The X-ray of the chest may or may not show the increased diameter or enlarged aorta. The signs of pulmonary edema, the symptoms of passive hyperemia may follow. The paroxysm may eventuate in death. Recovery may never be complete although frequent attacks may be deferred. Blood pressure may vary; to extreme heights or to very low levels.

Because of the occurrence of this condition at night while in bed or after a day's work, it is described as the angina of decubitus. Comment on this may be made as it often ends so tragically. Nocturnal angina is probably dependent upon night conditions. The patient may be wakened with a mere sense of difficult breathing, and with a sternal pain. This may alarm the patient, and asthmatic or dyspnoeic breathing follow. With a pain across the chest and radiating down the left arm to the wrist, the patient may experience pulmonary edema. This denotes heart failure and it alarms. Here is a patient beginning in an attack of angina and terminating in a state of heart decomposition and failure. This damaged heart, under hypertension has been overpowered probably by the prolonged decubitus, by an overfilled and unemptying stomach, by gas oppression.

2. Chronic Myocarditis

Myocarditis may be characterized by low blood pressure. Often the cases of myocarditis with low blood pressure are perplexing ones and require diagnostic scouting of the more active sort. But in the high blood pressure cases chronic myocarditis obtains in a large number of instances. High blood pressure and cardiac hypertrophy go hand in hand. Cardiac hypertrophy, in its terminal stage or advanced stage of chronic hypertension, undergoes structural changes which make for a bad acting heart. It is to this type of myocarditis that attention is directed. Microscopic changes reveal changes affecting muscular fibres, and Vaquez says there are two kinds, hard and soft sclerosis. He says hard sclerosis consists of "fibroid tissue poor in cellular elements, containing at the most a few leucocytes in lymph-spaces at the edge of sclerotic patches." These follow the muscle structure of the heart. Arteries and veins show little change. The

soft sclerosis shows enormous vascularity. According to Vaquez in this type capillary vessels are thickened and confluent.

Myocarditis with hypertension may be difficult to elicit so far as symptoms go because the evolution of the two conditions is slow. In the onset the symptoms are indefinite. The accentuation of the second aortic heart sound denotes cardiac hypertrophy. Later arterial tension gives place to ominous signs, arrhythmias, palpitation, precordial pain, shortness of breath, anginoid sternal pain, and cardiac murmurs, etc.

Dyspnoea is a most striking and important symptom in the damaged heart of hypertrophic type. Shortness of breath on slight exertion, but especially dyspnoea without exertion, is a symptom of a damaged heart. Paroxysmal dyspnoea with or without crepitant rales at the base denotes failing compensation which may eventually be characterized by pulmonary edema and pleural hydrops.

3. The Arrhythmias

Irregular action of the heart may and does occur without hypertension. There are arrhythmias unrelated to high blood pressure. But high blood pressure results from the heart action; the heart muscle becomes a part of the specifications of its varied pathology. The myocardium undergoes compensatory changes with the evolving patholgy of chronic hypertension. Not only does the auricular and ventricular contraction follow in proper sequence in the normally acting heart, but also the function of the specialized neuro-muscular bundle for initiating and conducting heart impulses acts regularly. But, it is conceivable, that a musculature, under constant overwork, subjected to vascular changes and muscular degeneration, may, in due course, undergo disorder and damage. It is upon such a basis that one may think of arrhythmias of the heart occurring in chromic hypertension.

At the junction of the superior vena cava with the right auricle is situated this specialized tissue and from here the heart receives at regular intervals stimuli. From here the stimulus of contraction rhythmically spreads over the auricles, then by the auricular bundle to the ventricles, which contract in turn. The vagus curbs the procedure. The functions of the special heart mechanism are rhythm, conductivity, excitability, and contractility. From above cited causes of hypertension these functions are interrupted and the damaged heart acts irregularly. These irregularities are variously classified into sinus arrhythmias, extra systoles, auricular fibrillation, auricular flutter, paroxysmal tachycardia, heart block, etc.

To discover these irregularities in the beginning instruments of precision are needed; for this purpose the electrocardiograph and polygraph are used. But the physician who is trained in observing the heart may detect, with the aid of his stethoscope and his finger on the radial pulse, and his eye upon the veins of the neck, many of the irregularities of the heart in time to institute measures for relief of a bad acting myocardium. Many of these more grave heart irregularities, however, are expressions of hopeless damaged heart to which no remedial measures may be applied with success.

4. Heart Failure

There are other causes of heart failure than arterial hypertension. There are many other causes, but yet high blood pressure may be and is frequently the cause of heart failure. The heart begins failure at the left ventricle. The left ventricle bears the brunt of the work in hypertension. By its systolic force it maintains the high pressure. Cardiac hypertrophy and competent aortic valves carry on for a long time. Then the second aortic heart sound loses its high note, the aortic ring valves and the left ventricle dilate, regurgitation occurs, the pressure falls, the right heart ventricle and auricular-ventricular valves yield, the auricle dilates; the heart fails. Pulmonary edema, angina pains, shortness of breath, cyanosis, gallop rhythm and heart delirium follow.

After forty years the heart should receive special consideration. Hypertension of the fifth and sixth decades should be detected and measures of every available sort taken to forestall the fateful trend of the damaged heart with hypertension in its various terminal stages. Much can be done. The second forty years cannot be attained without careful direction, if the heart is beginning to fail in the fourth decade.

Experience and observation of years lead to the conclusion that much is neglected today that is remediable in damaged hearts. In habits, in exercise, in daily routine, in infec-

tions, in dysfunction of organs, much may be done to relieve the damaged heart and enable it to carry on for years. For this a widespread interest in the periodic physical examination is advocated. By this system of examinations failing hearts may be helped. This is probably the most important organ to be carefully studied. It is so often neglected. Fear of being told that one has heart disease is often a cause among laymen for not being examined. Few laymen are there who do not fear heart disease, when, in fact, probably no organ responds with happier effect to treatment in the early stages of the damage.

Dr. George Ross

In his eighty-ninth year Dr. George Ross, of Richmond, Va., peacefully passed to his eternal rest, on the morning of March thirty-first.

Dr. Ross was a distinguished member of the medical profession in Virginia. He was known throughout the Commonwealth and the South as a foremost practitioner. For more than fifty years he practiced his profession in Richmond. Here his skill was sought and obtained by a large clientele. His were busy days, and often nights as well, during the decades before and after the turn of the century.

Besides conducting a large practice Dr. Ross was the chief surgeon of the Southern Railroad. He was one of the founders of the University College of Medicine at Richmond. For a number of years he held with striking success the chair of Obstetrics in that institution. As a teacher he showed an interesting characteristic worthy of mention. In his lectures he displayed a charm in delivery and a rhythm in diction which gave his medical lectures great popularity among the students. Any student who was favored by hearing his lecture on the female pelvis will not fail to recall, with pleasure and profit, the wealth of knowledge therein contained, or the grace and charm of the rendition. In remembering the spontaneity of his speech one can not but note Dr. Ross' delight in the use of words for the purpose of rhyme. His "Scatter Leaves" expresses with ease, in beautiful sentiments, his fine thoughts on friends, events, and God; betokening the fineness of a clean heart and life.

While Dr. Ross' work as practitioner is worthy of high praise, and his career as teacher notable, no appreciation, no matter how brief, can properly be concluded without commenting upon the charming personality and fine quality of his mind. One can hardly overstate the winning effect of the princely personality of our lamented friend. Of commanding bearing and distinguished address, in his palmy days, Dr. Ross' presence was striking and engaging. No matter whether in the sick room, in the hospital, in the patriotic parades of some Confederate memorial, or gracing the formal occasion of an exclusive social function, Dr. Ross was an outstanding person who elicited interest and attention. The bearing of a courtly Virginia gentleman was the badge of his individuality. The genuine kindliness of manner animated by vivacious and ready speech drew to him a large circle of friends and admirers.

In the evening of his long life, after retirement from practice, the lasting devotion of a large host of admirers in all walks of life was attested by the unceasing attentions and interest of these former patients and old friends. They brought him gifts, they came to visit him, they remembered him on anniversaries, they were ever attached to him and wished him well. Many received his blessings as he welcomed them at his home in his declining years. For those beautiful qualities of a gentle nature Dr. George Ross will be long remembered.

There were two additional characteristics of his life; he was a soldier and he was a churchman. No braver heart and no more valiant spirit ever drew a sword. In the cause of the Southern Confederacy he fought as he saw the right. As a youth, just from his medical studies, he cast his fortunes and his life with the Southern Army. He served with distinction and with honor. In the last years of his life his association with his Confederate comrades was constant and he found deep interest in talking of the days of the civil war.

As a churchman, this physician's career is striking. A member of St. Paul's church in Richmond, he served on its vestry for years. It was an inspiration to see him, long after the frost years had whitened his beard and his hair, receive, with dignity and grace, the offerings from the congregation.

A. G. B.

News Notes

More Rural Hospitals Needed.

More rural hospitals are needed throughout the country to overcome to some extent the shortage of country physicians. Graduates in medicine, after going through an expensive and lengthy specialized training, prefer city practice where up-to-date medical facilities are available. In a survey recently made by the U. S. Department of Agriculture, it was found that not more than 12 per cent of the rural population of the United States enjoys anything like modern health supervision. Forty Kentucky counties in 1924 were without adequate medical service, and one of these counties did not have a single doctor. In a Montana County of 5,000 square miles, there were only three doctors and no hospitals. In Minnesota, 127 small villages were reported to be without doctors.

Seventeen states have passed laws authorizing counties to tax themselves for hospital purposes and many rural hospitals have been built. These have been found of particular value in maternity cases. It has been estimated that 750,000 women in the United States annually pass through childbirth without medical attention. A large proportion of these women live on farms. There is no doubt that the mortality rate among them could be greatly reduced by the provision of adequate medical and hospital facilities. Neglect of motherhood is also held responsible for many of the physical defects of children.

The report on the country hospital situation describes the various kinds of rural and small community hospitals and states that the best satisfaction is given rural people by hospitals in which they have a direct interest.

The Dallas Meeting

Of the American Medical Association is right upon us. Many good things have been prepared and "a feast of reason and a flow of soul" may be expected by those who attend. Dr. William D. Haggard, of Nashville, Tenn., is president and Dr. Wendell C. Phillips, of New York City, president-elect. Virginia is to be represented by three delegates in the House of Delegates—Drs. Southgate Leigh, S. S. Gale and E. C. S. Taliaferro, alternate for Dr. Hunter H. McGuire, of Winchester.

Dr. W. L. Davenport,

Formerly of Amelia, Va., is now located at Glade Spring, Va.

Doctors Home From New York.

Drs. J. V. Jordan and J. M. Emmett, Clifton Forge, Va., have returned home after a trip to New York City, where they attended a medical meeting.

The Blind Can be Made Self-Supporting.

Pennsylvanians are now witnessing a most unusual campaign which has the two-fold purpose of acquainting the various communities of that State with the principal causes of blindness and the means of eliminating or counteracting them, and then of educating them to a better appreciation of the existing opportunities for training the blind and the near-blind to become self-supporting, happy and constructive citizens. The campaign is being financed by the Lions Club and is being directed by the Pennsylvania Association for the Blind, of which a totally blind man is secretary.

The central figure in this campaign is Hon. Henry E. Lanius, totally blind, who has for fourteen years been a member of the Pennsylvania Legislature and is a nationally known chautauqua speaker. Senator Lanius will spend the next year in conducting one-week campaigns in each of the Pennsylvania cities in which there is a Lions Club.

The National Committee for the Prevention of Blindness states that in Pennsylvania alone, last year, 538 eyes were lost in industrial accidents, and that a total of $800,598 was paid workmen as compensation for this loss, while at the same time a total of $793,952 was paid for the loss of 97 legs, 73 arms, and 190 hands.

Dr. Nelson Mercer,

Formerly tuberculosis clinician with the Richmond Health Bureau, has returned to Richmond, after a service with the U. S. Veterans' Bureau, and has opened offices at 1100 West Franklin Street, for the practice of medicine.

Dr. R. Ruggieri,

Of Norfolk, Va., diplomatic representative of the Italian government, was the principal speaker at a meeting of citizens of Italian birth and descent, held in Richmond, last month.

Indentured Children Often Improperly Treated.

The statutes of twelve states—Arkansas, Illinois, Indiana, Kansas, Maryland, Michigan, Nevada, Pennsylvania, Rhode Island, Virginia, West Virginia, and Wisconsin—still permit child indenture The Children's Bureau, upon request of Wisconsin authorities, recently made a survey in that State, of conditions obtaining in homes provided for indentured children. Of 540 homes visited, 48 per cent were considered actually detrimental to the children, 44 per cent as satisfactory, and only 8 per cent as high grade.

Dr. W. H. F. Miller,

Clifton Forge, Va., was called to Florida. last month, on account of the illness of his sister.

Seaside Cottage Sanitarium.

Doctors W. L. Harris and Claiborne Willcox, who for the past six years have operated the Seaside Cottage Sanitarium, during the summer months. for the use of their private patients, are just completing a modern twenty-four room building on the water front at Virginia Beach, to be used as an all the year round sanitarium for medical cases, convalescents, and in fact for any who may desire the quiet restful atmosphere of the seashore.

Doctor C. Z. Corpening will be the physician in charge and will reside in the sanitarium.

During the summer months, the institution will cater chiefly to mothers with sick children, who will be under the direct supervision of Doctors Harris and Willcox as heretofore, but other patients also may be admitted at all times.

The Sanitarium will open June 1st.

New Officers of State Board of Health.

At a meeting of the Virginia State Board of Health, on April 1st, Dr. W. T. Graham, Richmond, was elected president, to fill the vacancy caused by the death of Dr. W. M. Smith, Dr. Guy Harrison, Richmond, vice-president, and Dr. Lawrence T. Royster, University, secretary.

Dr. Roshier W. Miller,

Richmond, was elected president of the North Richmond Athletic Association, at its reorganization meeting the first of this month.

Dr. W. Calhoun Stirling,

Who moved to Washington, D. C., from Winston-Salem, N. C., less than two years ago, has been appointed associate professor of Genito-Urinary Surgery in the Georgetown University Medical School, Washington, D. C. Dr. Stirling is an associate member of the Medical Society of Virginia.

Dr. W. Grimes Byerly,

Of the class of '24, Medical College of Virginia, formerly engaged in general practice in Cooleemee, N. C., is now an assistant physician on the staff of the North Carolina Sanatorium for the Treatment of Tuberculosis, at Sanatorium, N. C.

Dr. John W. H. Pollard,

Who moved to Quincy, Ill., several years ago, from Lexington, Va., has been appointed commissioner of health of Evanston, Ill.

Virginia Shows Decline in Birth Rate Among Better Classes.

There was a decline in last year's birth rate in Virginia, as compared with former years, and there are similar reports of declining birth rates in other states and countries. The serious part of this decline is the fact that the number of births to 1,000 native women is less than half of what it is to foreign women. An examination of Virginia birth certificates shows that the number of children per family in the sections of the cities where the standard of living is high is much smaller than in the sections where the groups are mixed. As stated by the Bureau of Vital Statistics, it takes but a few generations to change the character of the population.

Dr. E. P. Tompkins,

Formerly of Roanoke, Va., is now located in Lexington, Va.

Dr. A. G. Coumbe,

Until recently of Washington, D. C., has been appointed manager of the Sub-Office of the U. S. Veterans' Bureau, in Honolulu, T. H.

Visit Europe.

Among the Tidewater physicians attending the Interstate Post-Graduate Clinic Assemblies of American Physicians in Europe, this Spring, will be Dr. J. E. Rawls, of Lakeview Hospital, Suffolk, Va., and Dr. James W. Reed, of Ocean View, Norfolk, Va.

Dr. W. M. Tunstall,

Lovingston, Va., was reported quite ill with "flu" last month.

The American Psychiatric Association

Will hold its annual meeting in New York City, June 8-11, with headquarters at the Waldorf-Astoria. The president is Dr. C. Floyd Haviland, of Albany, N. Y., and the secretary, Dr Earl D. Bond, of Philadelphia. The annual address, always the special feature of these meetings, will be given by Dr. George E. Vincent, of the Rockefeller Foundation.

Dr. Henry T. Garriss,

Of the class of '24, Medical College of Virginia, who recently completed an interneship at the State Hospital, Hazelton, Pennsylvania, has located in Richmond, for the practice of medicine, and has offices at Brookland Park Boulevard and North Avenue.

Why Children Leave School.

Few children "play truant" from school, compared with the number of children staying away from school with the knowledge and consent of their parents.

Investigation of compulsory attendance laws in the State of New York by Teachers' College, New York City, showed this to be the case. The investigators recommended education of the parents rather than police methods with the child.

Boy Immigrants, Australia.

"Big Brother" committees to look after boy immigrants have been organized in Australia, according to the official announcement of the High Commissioner for Australia in London. As soon as a boy arrives, he is placed under the care of a big brother who helps him to find employment and undertakes to look after him till he is twenty-one. The boy agrees to follow the advice of his big brother and to put a part of his wages, which are fixed for beginners at 15 s. a week and "keep" in a Government bank.

Married.

Dr. Gerald A. Ezekiel, Richmond, Va., and Miss Julia-May Sommers, Washington, D. C., February 22.

Statue to Dr. Crawford W. Long.

In Statuary Hall, Washington, D C., on March 30th, there was unveiled a statue of Crawford W. Long, M. D., of Georgia, the first to use ether anesthesia. This date was selected for the unveiling as being the eighty-fourth anniversary of the discovery. A committee from the Medical Association of Georgia attended the exercises, at which the principal addresses were made by Dr. Hugh H. Young, of Johns Hopkins Hospital and Senator Pepper, of Pennsylvania, who represented the University of Pennsylvania from which Dr. Long graduated in medicine in 1839.

Dr. A. B. Grubb

Returned to his home at Cripple Creek, Va., about the middle of March, after a short stay in Grayson County, Va., where he went to attend the funeral of his brother.

Dr. R. E. Booker,

Lottsburg, Va., left recently for a visit to Florida.

Dr. Albert E. Wilson,

Of Norfolk, Va., has announced his candidacy for the City Council of that place, in the election to be held June 8th. Dr. Wilson's experience gained from his association with the development of Park Place, Norfolk, should fit him to become a good councilman.

Dr. and Mrs. D. S. Divers

Returned to their home in Pulaski, Va., the latter part of March, after a short visit to Mount Airy, N. C.

Dr. L. T. Rusmiselle,

Until recently of Waterford, Va., has moved to Washington, D. C., and has offices at 644 F Street, Southwest.

"A Guide to Good Meals for the Junior Homemaker"

Is a bulletin which has recently been issued by the Government—the first of its kind solely for the adolescent. It is written in a style that should gain and hold the interest of the young reader, and may be had, while the supply lasts, by writing to the United States Department of Agriculture, Washington, D. C.

Dr. St. Clair Darden,

Of the class of '12, Medical College of Virginia, was elected president of the Indiana Tuberculosis Association, at its meeting held in February. Dr. Darden was at one time a member of the Medical Society of Virginia. He

has for several years been medical superintendent of Healthwin Hospital, just outside of South Bend, Indiana.

Dr. W. B. Fuqua

Has been quite sick at his home in Radford. Va.

Dr. Ernest Flora,

Of Roanoke, Va., was a recent visitor in Lawrenceville, Va.

Dr. Sidney L. Scott,

Of Fredericksburg, Va., has been elected president of the Chamber of Commerce of that place, for the year beginning April the first.

The American Board of Otolaryngology

Has arranged for two examinations during the month of April as follows:

St. Paul's Sanitarium, Dallas, Texas, Monday, April 19th, at 9 A. M.;

Stanford University Medical School, Clay and Webster Streets, San Francisco, Calif., Tuesday, April 27th, at 9 A. M.

Applications may be secured from the Secretary, Dr. H. W. Loeb, 1402 South Grand Boulevard, St. Louis, Missouri.

Dr. Joseph M. Burke,

Chief surgeon of the Seaboard Air Line Railway, and for many years a resident of Petersburg, Va., has moved to Norfolk, Va., and has offices in the S. A. L. Railway Building

Dr. A. B. Greiner,

Rural Retreat. Va., has been elected second vice-president of the Chamber of Commerce of that place.

Dr. Stuart McGuire,

Richmond, Va., by invitation, delivered the address on surgery, at the annual meeting of the South Carolina Medical Association, in Sumter, early this month.

Dr. William O. Neal,

Until recently of Asberrys, Va., has located at Chatham Hill, Va.

Dr. and Mrs. T. P. West,

Bedford, Va., left about the middle of March for a visit to Florida.

Dr. M. E. Hundley,

Martinsville, Va., who went to Philadelphia for treatment, following the death of his wife. is now much improved.

Dr. William W. Cleere,

Formerly of Hopewell, Va., but who moved away from Virginia several years ago, has returned, after practicing for a time in New Jersey, and has located at Keysville, Va., where he will be engaged in the practice of medicine.

Health Work, New Hampshire.

The New Hampshire Tuberculosis Association has adopted a program providing for the examination and treatment, when treatment is necessary, of all children in the State who are under weight and suffering from malnutrition, according to an announcement of the bulletin of the State Board of Health.

How the Home Fails the Child.

Four-fifths of 400 children brought to Massachusetts "habit clinics," failed to get what a "normal" home should give them, according to a statement by the Massachusetts division of mental hygiene.

The Massachusetts division assumes that a normal home should give a child not only food and shelter but training in conduct, affection, some of the culture of the group to which he belongs, opportunity for play, companionship with other children. According to this standard only one out of five of the habit clinic children had a real home. In most cases where the home failed the child it was not through poverty, but for spiritual reasons. For instance, of 280 children, 83 per cent received no teaching from their parents of what right or wrong behavior is; 78 per cent received no effective control, nearly 50 per cent lived in homes showing no cultural interests, 41 per cent lacked opportunity for normal play, and 10 per cent were unloved.

Child Sweatshop Workers.

Twelve hundred children in 600 families were found doing factory work at home, according to an investigation by the Pennsylvania Department of Labor and Industry. All these children were under sixteen, and half were between ten and fourteen. Pennsylvania is now attempting to regulate industrial home work and to protect both the workers and the public by requiring licenses from home workers and granting them only when the law is lived up to.

Dr. E. W. Perkins,

Of Petersburg, Va., left the last of March for a trip to New York.

Dr. Wilkins J. Ozlin,

Recently of Dundas, Va., is now at Catawba Santatorium, Va.

Dr. James H. Hargrave,

Petersburg, Va., received a broken arm and was cut and bruised in several places, on the night of March 11, when his automobile was side-swiped by another and plunged down an embankment.

Dr. D. B. Stuart

Has returned to Dublin, Va., after spending several months as assistant to Dr. J. R. Blair, at Hygeia Hospital, Richmond.

Physical Defects in University Students.

According to the *Journal of the American Medical Association*, the department of hygiene and public health at the University of Kentucky, in Lexington, recently examined 837 freshmen and it was found that none of them was free from physical defects. There were 512 males and 325 women. The largest number of defects were of the nose and throat, and the next largest number was of vision. More women than men students had defective feet, but there were sixteen men students and no women with skin disease. About one-eighth of the total number had some form of heart disease, and not quite a third had been vaccinated against smallpox in the last five years.

Dr. H. O. Bell,

Of the class of '20, Medical College of Virginia, has accepted a position on the staff of the Essex County Hospital, Cedar Grove, New Jersey. Dr. Bell was for a time connected with the Richmond Bureau of Health.

The Physicians' Home, Inc.

Organization plans are progressing rapidly for the National Endowment Fund of the Physicians' Home, Inc., the movement to provide homes for the old and financially insecure physicians of the country. The plan has been endorsed by the American Medical Association and contributions are being received from all over the country.

Mr. Charles Capehart, Times Building, 22nd Floor, Broadway and 42nd Streets, New York City, is campaign director and will furnish any information requested.

The plan is to establish one home in the Northeastern territory, including Pennsylvania, New Jersey, New York and the New England states. Option has been secured on an estate in Connecticut, fifty miles from New York City, for this unit.

The Southern territory include the states from Maryland to Florida. Our readers will be interested in learning that the hospital building erected by the late Dr. G. T. Divers, at Stuart, Va., is being considered for the unit in this section.

Two other units to include the Middle West and the far West are also planned.

The Annual Report of St. Elizabeth's Hospital, Richmond,

For its fourteenth year, ending December 31, 1925, shows that twenty-three articles and one book were published by its staff during the year. The book is "Surgery of the Stomach and Small Intestines" by Dr. J. Shelton Horsley.

There were 728 operations, 141 cystoscopies, and a total number of 926 patients Of this number, thirty-eight died, making a general hospital mortality of 4.1 per cent. The operative mortality was 3.9 per cent (one patient dying within twenty-four hours after admission); the non-operative surgical mortality was 5.8 per cent (one patient dying one and one-half hours and another two and one-half hours after admission); the medical mortality was 4.8 per cent; the urological 2.3 per cent. There were 942 anesthesias and 9,812 laboratory examinations.

There were seventy-five cancer cases in the 926 patients admitted to this hospital during 1925, which shows that 8 per cent of all patients had malignant tumors.

The report includes a case history of the thirty-eight patients who died in the hospital.

Dr. A. W. Terrell,

Lynchburg, Va., has been elected one of the delegates from the Lynchburg Rotary Club to the District Convention to be held in Durham, N. C., this month.

Dr. E. M. Chitwood,

Wytheville, Va., has been elected captain of the medical unit of the 116th infantry, National Guard, which has been organized in that place.

Blue Ridge Sanatorium to Have an Addition.

The Masonic Grand Lodge of Virginia will construct an infirmary and pavilion at Blue Ridge Sanatorium, Charlottesville, Va. Plans are being prepared and work will shortly be started, with the hope of getting it ready for occupancy by the first of the coming year. It is understood that Masons and members of their families will have preference on the waiting list in entering this building.

Dr. L. E. Fuller,

Callands, Va., has been appointed a member of the Pittsylvania County School Board.

The Virginia Society of Oto-Laryngology and Ophthalmology

Will hold its annual meeting in Petersburg, April 27, under the preesidency of Dr. H. S. Hedges, of Charlottesville, Va. Dr. E. U. Wallerstein, Richmond, is secretary. An interesting program has been arranged and several invited guests are expected to present papers.

The American Health Congress,

In which sixteen national organizations will participate under the auspices of the National Health Council, will be held at Atlantic City, May 17-22, inclusive, with headquarters at the Steel Pier. An interesting program and the natural attractions of Atlantic City are expected to draw an attendance of about 7,000. Special railroad rates from all parts of the country have been secured.

Current History Magazine.

In connection with our service of placing magazine subscriptions for members, we especially call attention to *Current History*. This magazine has no editorials, but publishes each month articles by expert writers on matters that are occurring in all parts of the world, and also gives a review of what has happened in all countries of the world during the preceding month. If interested why not send us the price of $3.00 at once that we may place your subscription?

Conference of State Health Workers.

As we go to press health workers from all parts of the State and the Virginia Public Health Association are completing a conference in Richmond. Many subjects of interest to health workers are being discussed. Among the prominent speakers before the conference are Surgeon General Hugh S. Cumming, of the U. S. Public Health Service, Dr. W. G. Smillie, of the International Health Board of New York City, Surgeons L. L. Lumsden and R. E. Dyer, of the U. S. Public Health Service, and Dr. William H. Howell, of Johns Hopkins University.

Officers elected for the coming years are: President, Dr. R. W. Garnett, Danville; first vice-president, Dr. P. M. Chichester, Clarendon; secretary-treasurer, Dr L. L. Williams, Surgeon of the U. S. Public Health Service, attached to the State Board of Health (reelected). Mr. Aubrey H. Straus, of the laboratory of the State Board of Health, was elected representative to the American Public Health Association.

Adult Weight Conference.

Upon request of the editor of the *Delineator* magazine, officials of the American Medical Association recently held a conference known as the "Adult Weight Conference" at the Academy of Medicine in New York City. Mrs. Meloney, editor of the *Delineator*, sought scientific advice and co-operation in an endeavor to reach some sound basis on which to reply to the large number of women who appeal to her editorial department for advice and suggestions regarding questions of weight.

As a result of the deliberations of this conference, several committees were appointed to conduct a careful study of the relationship of forced weight reduction to health. Dr. Wendell C. Phillips, president-elect of the A. M. A, and Dr. Morris Fishbein, editor of the *Journal of the A. M. A.*, were among the speakers at this conference.

Joint Meeting of Dental Associations.

The North Carolina Dental Society and the Virginia State Dental Association will hold a joint meeting in Richmond, Va., April 13, 14, and 15, with headquarters at Jefferson Hotel. Dr. Harry Bear, Richmond, is president of the Virginia Association.

Health Heroes.

The Metropolitan Life Insurance Company, of New York City, is publishing a series of pamphlets on medical men. They are especially prepared under the direction of the School Health Bureau of the Metropolitan Welfare Division for junior and senior high

school use. The first two of these pamphlets are on Pasteur and Trudeau. Others in the series will be on Reed and Jenner.

Dr. William H. Parker

Will be among the Richmond Rotarians who will attend the annual district conference of Rotarians in Durham, N. C., the middle of this month.

Civil Service Examinations.

The U. S. Civil Service Commission, Washington, D. C., announces open competitive examinations for:

Principal social worker (social hygiene), receipt of applications to close April 20;

Head nurse, receipt of applications to close May 11;

Trained nurse (psychiatric), receipt of applications to close May 15;

Social worker (psychiatric), receipt of applications to close May 18;

Graduate nurse and graduate nurse (visiting duty), applications to be rated as received until June 30.

Full information and application blanks for any of the above examinations may be obtained from the U. S. Civil Service Commission, Washington, D. C., or the secretary of the board of U. S. Civil Service Examiners at the postoffice or custom house in any city.

Dr. and Mrs. A. I. Dodson

Have just returned to their home in Richmond, Va., after a visit to Baltimore, where Dr. Dodson spent some time attending urological clinics.

Dr. and Mrs. W. T. McLemore

Celebrated the silver anniversary of their wedding at a reception in their home in Courtland, Va., on the evening of April 3rd.

Dr. L. O. Vaughan,

Waverly, Va., is at home again after a motor trip with friends to Washington, D. C.

Dr. and Mrs. M. H. Tredway,

Of Emporia, Va., left early in April for New York City, where Dr. Tredway expects to spend some time taking a post-graduate course.

Dr. H. S. Belt,

South Boston, Va., was a recent visitor in Richmond.

Dr. H. R. Farley,

Pulaski, Va., recently visited his former home in Giles County, Va.

Obituary

Dr. George Ross,

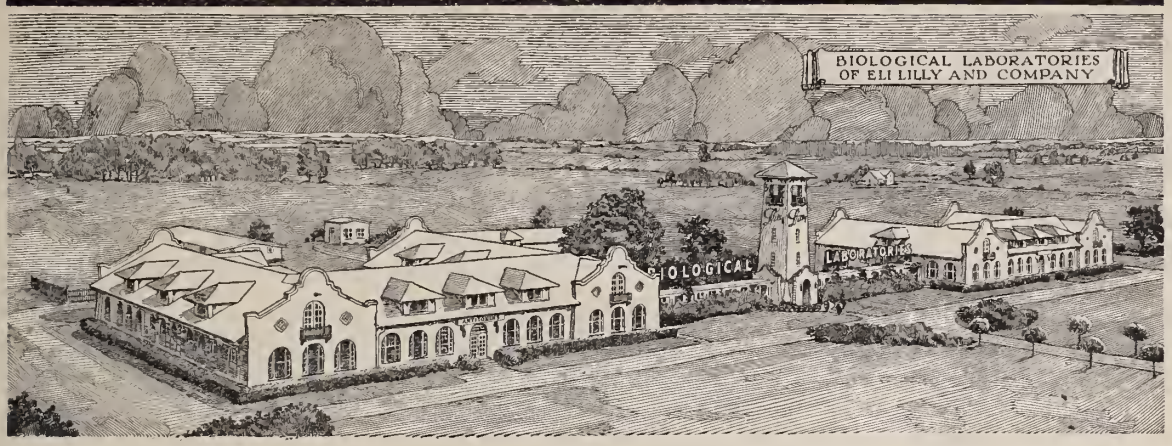
For many years a prominent member of the medical profession, died at his home in Richmond, March 31, at the age of eighty-eight years. He is survived by two daughters and a brother. Dr. Ross was born in Culpeper County, Va., and received his academic education at Virginia Military Institute. After this he studied medicine at the University of Virginia, receiving his diploma in 1861. Shortly thereafter he entered the Confederate army as an assistant surgeon. Following the war, he located in Richmond and took an active part in the social and professional life of the city. Dr. Ross was an honorary member of the Medical Society of Virginia, emeritus professor of obstetrics at the Medical College of Virginia, a Shriner, and had been identified with a number of local and national organizations, by many of which he had been honored.

Dr. Emory Hale Connelly,

A well known physician of Southern Virginia, died at Alberta, Va., March 18, following the cutting of an artery in the leg. It is believed that Dr. Connelly killed himself as the result of despondency, although for the past several months he had seemed in good spirits. He was forty-four years of age and graduated from the former University College of Medicine, Richmond, in 1905. He had been a member of the Medical Society of Virginia since 1906. A large family connection survives him.

Dr. Thomas S. McDavitt,

Trustee of the American Medical Association continuously since 1913, died in St. Paul, Minn., March 3, aged sixty-six years. He was graduated from the Chicago Medical College in 1879. He was for a number of years secretary of the Minnesota State Medical Association and had represented his state in the House of Delegates for several terms before being made a trustee.



TWO GREAT CONTRIBUTIONS TO MEDICINE

Four years ago we were accorded the privilege of co-operating with the Insulin Committee of the University of Toronto in developing a process of manufacturing and refining Insulin on a large scale.

The names "Insulin" and "Lilly" are very closely associated in the minds of diabetic specialists; first, because Iletin (Insulin, Lilly) was the first commercial preparation of this wonderful product available to the medical profession in the United States, and second, because the name "Lilly" has been linked with scientific medicine and quality for a full half century.

The first license to manufacture Scarlet Fever Antitoxin was issued by the United States Public Health Service to Eli Lilly and Company. The method of preparation gives a product of high antitoxin titer. Improved processes of refinement, concentration and potency permit a dose of small volume.

Each lot of Lilly's Scarlet Fever Streptococcus Antitoxin is tested with a control lot which has been proved therapeutically. It is council-accepted and offered in concentrated form in prophylactic packages, A-80, and in therapeutic packages, A-82.

Send for Further Information

Lilly Products are Supplied Through the Drug Trade

ELI LILLY AND COMPANY

INDIANAPOLIS, U. S. A.

Capital $1,000,000 Surplus Earned $1,500,000

ESTABLISHED 1892

To act as Executor, Guardian and Trustee

$30,000,000

of investments held in Trust

Confidential Interviews Invited.

NEW YORK EYE AND EAR INFIRMARY

2nd Ave., Corner 13th Street, New York, N. Y.

SPECIAL COURSES OF POST GRADUATE INSTRUCTION IN

Operative Surgery of the Eye and Ear
Refraction
Muscle Anomalies
Ophthalmoscopy
Anatomy of the Ear
External Eye Diseases
Functional Testing of the Eye
Minor Otology
Histology

Address WEBB W. WEEKS, M. D., *Secretary.*

THE NEW YORK POLYCLINIC

MEDICAL SCHOOL AND HOSPITAL

(ORGANIZED 1881)

(The Pioneer Post-Graduate Medical Institution in America.)

WE ANNOUNCE

COURSES IN THE FOLLOWING:

For the General Practitioner: Internal medicine and the medical specialties.
Gastroenterology: and allied subjects.
General Surgery: and all its branches.
Gynecology:
Urology: and allied subjects.
Proctology: and allied subjects.
Eye, Ear, Nose and Throat: combined course.
Pathology and Roentgenology:
Cadaver Courses: in all branches of surgery.
Short Time Personal and Special Courses in all medical and surgical specialties.

FOR INFORMATION ADDRESS

THE EXECUTIVE OFFICER, 345 West 50th Street, NEW YORK CITY

THE N. Y. ACADEMY OF MEDICINE
MAY 14 1926
LIBRARY

Virginia Medical Monthly

OFFICIAL ORGAN OF THE MEDICAL SOCIETY OF VIRGINIA

Vol. 53, No. 2.
WHOLE No. 887.

RICHMOND, VA., MAY, 1926

$2.00 A YEAR
20 CENTS A COPY

CONTENTS.

ORIGINAL COMMUNICATIONS:
Lung Collapse in the Treatment of Pulmonary Tuberculosis. Dean B. Cole, M. D., Frank S. Johns, M. D., and P. E. Schools, M. D., Richmond, Va. 71
Puerperal Sepsis—Report of Cases of Intrapartum Infections. Millard B. Savage, M. D., Norfolk, Va. 74
Excessive Vomiting of Pregnancy. L. A. Calkins, M. D., Ph. D., University, Va. 78
Partial Gastrectomy Under Local Anesthesia for Cancer of the Stomach in a Man 71 Years of Age. J. Shelton Horsley, M. D., Richmond, Va. 80
The Functional Disorders. Beverley R. Tucker, M. D., Richmond, Va. 85
Paralysis of the Third, Fourth and Sixth Nerves from Sphenoidethmoid Disease. Clifton M. Miller, M. D., F. A. C. S., Richmond, Va. 88
The Bedside Study of the Circulation in Acute and Chronic Infections. Garnett Nelson, M. D., Richmond, Va. 91
Local Anesthesia. William B. Marbury, M. D., Washington, D. C. 95
The Treatment of Eclampsia. M. Pierce Rucker, M. D., Richmond, Va. 97
Chronic Hypertension Nephritis in a Child, Showing Unusual Neurological Symptoms. Frank H. Redwood, M. D., Norfolk, Va. 103
Some Thoughts on Diphtheria. J. A. Wright, M. D., Doswell, Va. 105
Present Method of Dealing with Kidney and Ureteral Stone. Seavy Highsmith, M. D., Fayetteville, N. C. 107
Acute Mastoiditis in Infants—Report of Three Cases. G. B. Dudley, M. D., Martinsville, Va. 110
Diabetes. A. T. Finch, B. S., M. D., Chase City, Va. 111
Bone Infections. Alonzo Myers, M. D., F. A. C. S., Charlotte, N. C. 115
Health in Relation to National Defense. W. Armistead Gills, M. D., Richmond, Va. 119
PROCEEDINGS OF SOCIETIES 123
THE COUNTY SOCIETY 125
WOMAN'S AUXILIARY 125
THE TRUTH ABOUT MEDICINE 126
EDITORIAL 128
NEWS NOTES 131
OBITUARY 138

INDEX OF ADVERTISERS—Advertising Page 5.

CALCREOSE

Creosote without its faults

Wherever creosote is indicated in the treatment of pulmonary inflammations, such as colds, bronchitis, and tuberculosis, Calcreose can be used to advantage.

This loosely combined product of creosote and hydrated calcium oxide largely overcomes the gastric disturbance associated with the administration of creosote alone.

Slow absorption, toleration by sensitive stomachs, and the therapeutic advantages of both creosote and lime combine to make Calcreose a most effective remedy.

Calcreose can be given in large doses for long periods without apparent difficulty.

Powder: Tablets: Solution

Samples of Tablets on Request

THE MALTBIE CHEMICAL COMPANY
Newark, New Jersey

Powdered Whole Lactic Acid Milk

A Standard Product { Always uniform—Always ready to use
Keeps perfectly fresh for one year

SUPPLIED IN TWO FORMS:

MEAD'S CULTURED LACTIC ACID MILK
MEAD'S U. S. P. LACTIC ACID MILK } *Popularity favors the U. S. P. Both are excellent*

"THE CHIEF ADVANTAGE of whole Lactic Acid Milk lies in the fact that it is a concentrated food and may be fed to *athreptic* infants and other below-weight infants whose tolerance for fat and sugar has been lowered, in sufficient amounts to bring about a gain in weight without causing a digestive disturbance." [1]

"ACID added to cow's milk decreases the buffer action of the milk. Acid milk increases gastric activity, thereby bringing gastric activity within the range of peptic digestion." [2]

Marriott and Davidson [3] observed that poorly nourished infants showed a definite acid deficiency in the gastric juice. They employed Lactic Acid Milk in the treatment of malnutrition. At the St. Luke's Children's Hospital, Marriott was able to reduce the mortality from athrepsia from 78 percent to 26 percent.

Gleich [4] used Lactic Acid Milk with success as a complemental food with breast milk. Weight gains were satisfactory.

* * *

The use of LACTIC ACID MILK appeals to the infant feeder from a biologic as well as a chemical standpoint and is fast becoming popular with pediatrists throughout the land.

Lactic Acid Milk is not intended to replace ordinary milk and carbohydrate dilutions for well infants.

To Make Up Feedings

Both of Mead's Lactic Acid Milks are reliquefied and ready for use when

1 ounce (4 level tablespoonfuls) is added to 7 ounces of water

4 ounces (16 level tablespoonfuls) added to 28 ounces of water makes one quart

Each package contains enough powder to make four quarts. One level tablespoonful of DEXTRI-MALTOSE added to 8 ounces of reliquefied Lactic Acid Milk will bring the carbohydrate content up to 7 percent.

MEAD'S LACTIC ACID MILK

may be made up and ready to feed in five minutes. It flows readily through the feeding nipple.

Bibliography:

[1] Chapman, J. W., Calif. & Western Med. Dec. 1925. Vol. XXIII. No. 25.

[2] Weeks, V. J., Archives of Pediatrics, Nov. 1925. Vol. XLII. No. 11.

[3] Marriott, W. McK. and Davidson, L. T. J. A. M. A. 1923. Vol. 81, pg. 2007.

[4] Gleich, M., Archives of Pediatrics, 1924. Vol. 41, Page 548.

Samples furnished only to the physician when the name of his drug store is given. Trial supplies for private practice or clinics furnished gratuitously. Please state your requirements in a letter.

MEAD JOHNSON & COMPANY, Evansville, Indiana, U. S. A.

Manufacturers of Infant Diet Materials Exclusively

Virginia Medical Monthly

Official Organ of the Medical Society of Virginia

Vol. 53, No. 2.
WHOLE No. 887.

RICHMOND, VA., MAY, 1926

20 CENTS A COPY
$2.00 A YEAR

Original Communications

LUNG COLLAPSE IN THE TREATMENT OF PULMONARY TUBERCULOSIS.*

By DEAN B. COLE, M. D.,
FRANK S. JOHNS, M. D.,
and
P. E. SCHOOLS, M. D.,
Richmond, Va.

Of the many specifics and other therapeutic cures that have been tried in the treatment of pulmonary tuberculosis, only one has stood the test of time, and that is rest. So well is this factor recognized that many mechanical devices and surgical procedures have been developed to aid in putting an afflicted lung at partial or complete rest and among these we have (1) Postural rest, advocated by Webb and Sewall; (2) Phrenic nerve section, causing hemi-paralysis of the diaphragm and partial lower lobe collapse; (3) Local replacement by some foreign body of the affected part, as paraffin, fat, etc., advocated by Tuffer; (4) Lung collapse by intra-pleural introduction of gas or air, first advocated by Forlanini in 1882 and later brought into more general use by Murphy in 1898; (5) Rib resection with narrowing of the chest, advocated by Friedrich, Wilms, Sauerbruch and others, but for this discovery credit should go to Brauer's combination of clinical insight and surgical imagination. In 1906 he suggested to his surgical colleague, Friedrich, the collapsing of the whole chest wall, and the operation was later carried out by resecting a long piece of all the ribs on one side.

These last two mentioned procedures, pneumothorax and thoracoplasty, underlie our present effort at a mechanical cure of pulmonary tuberculosis, and to a discussion of these will this paper be limited. As thoracoplasty is never done unless pneumothorax has failed, the indications and contra-indications for both procedures will be studied together.

The absolute indications for pneumothorax are: (1) moderately advanced or advanced disease with subacute course, with or without cavity, in which the process is strictly unilateral, or the tuberculosis of one side strictly latent; (2) severe uncontrollable pulmonary hemorrhage, in which the source of the bleeding is definitely known. The relative indications for pneumothorax are: (1) moderately advanced or advanced disease, with little tendency towards progression, with latent or inactive lesions on the other side; (2) incipient unilateral disease, progressive under other forms of treatment; (3) moderately advanced or far advanced patients with chronic type of lesion usually associated with cavity formation. Here treatment may be undertaken on the more active lung even with considerable trouble on the other side, in the hope of alleviating symptoms and getting the patient up and around; (4) very acute unilateral lesion of pneumonic type and if there is indication of beginning cavity formation, collapse should be induced immediately.

All patients receiving pneumothorax treatment should be thoroughly studied both before and during the period of treatment. Clinical findings, fluoroscopic observations and X-ray study should be correlated as to give an intimate understanding of the progress of the collapse and its effect on both patient and disease. Frequent fluoroscopic examinations are essential in determining the amount and uniformity of collapse, fluid formation, the presence or absence of adhesions, and whether or not there is mediastinal shifting. By a consideration of these factors, along with amount of air injected, frequency of air injections, and manometer readings, combined with physical examination, may be determined the condition of the collapsed lung. Rather frequent stereoscopic X-ray plates should be made to follow the progress of the contra-lateral lung, each new set of plates being compared with those made previously, as in this minute changes can be determined. The foregoing, along with a study of pulse, temperature variations, cough, amount and consistency of sputum, and general condition of patient, gives a

*Read before the fifty-sixth annual meeting of the Medical Society of Virginia, in Richmond, October 13-16, 1925.

very definite index as to the success or failure of the pneumothorax.

As to amount of air to be injected and frequency of injections, so many factors have to be considered individually, it is hard to lay down even general rules to follow. However, we believe from 300 to 500 c.c. of air to be the optimum and maximum quantities of air to be given at one time in cases without adhesions, never giving enough air to produce a positive intra-pleural pressure as determined by manometer readings. Cases having adhesions usually will require less air and greater pressure, but increase in pressure should be gradual, due to danger of rupture of adhesions. These can be stretched if this is done slowly. We believe better results with fewer complications are obtained by giving less air more frequently and keeping the lung as near optimum collapse as possible rather than giving large amounts of air at less frequent intervals with the accompanying wide fluctuations in intra-pleural pressures.

The most frequent complication is fluid formation, this occurring in about 50 per cent of all cases. Usually it is not necessary to withdraw this as it will soon absorb, but should the amount become excessive the fluid may be withdrawn and air substituted. Should the patient have a continued rise in temperature or fail to gain weight, an increase in disease of contra-lateral lung and intestinal tuberculosis, should both be looked for.

The operative treatment for advanced pulmonary tuberculosis is of interest to the medical man as well as to the surgeon. We may call it a surgical procedure of recent origin. It is an advancement upon a condition which the surgeon has long been reluctant to investigate. Already the operative results of thoracoplasty are sufficient to arouse the ultra-conservative. The principles involved in the operation are sound, its procedure logical, and its purpose so reasonable that even the skeptic is at a loss for complaint. Briefly, our plan is to produce physical and physiological rest by mechanical compression, so that the diseased areas of the lung will have a favorable chance for circumscribing and controlling the tuberculous lesion.

We note first the history and progress of thoracoplasty. Forty years ago, DeCerenville practiced some form of collapse of the chest-wall. His operation resulted in a high mortality and was soon discarded. A few years later an operation on the apex of the lung was advocated; it has been modified and improved until today we use it under the term apicolysis. In 1908 Friedrich and Brauer advanced a type of thoracoplasty which has stood the test of time. Like every surgical procedure, this operation has had many modifications and improvements, but the fundamental principles have remained the same. Sauerbruch realized that Friedrich's operation was too radical for tuberculous cases and introduced a more conservative type of operation which has been, generally speaking, universally adopted.

The selection of cases as to indication and contra-indication is by far the most important point in this whole subject. At the outset it should be emphasized that if pneumothorax has a possible chance to bring about the desired results, it should have continued preference over thoracoplasty. The indications for thoracoplasty and pneumothorax have many points in common, therefore, the closest co-operation between an expert in tuberculosis and the surgeon is absolutely essential.

The indications for thoracoplasty are as follows:

1. Cases ideal for pneumothorax but for the fact that dense adhesions exist. It is understood that pneumotharax has always been attempted by one skilled in its use.

2. Cases of pulmonary tuberculosis following trauma to the lung and pleura. Such cases are unsuited for pneumothorax because a satisfactory collapse is impossible from the beginning.

3. Thoracoplasty has been suggested in cases of severe hemorrhage.

4. In cavity formation, more especially those of the base. (The combined adhesions to the diaphragm and parietal pleura prevent a working collapse by pneumothorax.)

5. Thoracoplasty should always be used in tuberculous cases with fistulous tracts.

6. Cases in which only partial pneumothorax can be produced (a partial thoracoplasty has proven beneficial).

7. Finally, thoracoplasty has proven most suitable in certain fibrous forms of pulmonary tuberculosis.

Contra-indications for the operation:

1. Tuberculous disease elsewhere in the body, intestines, kidney, bone, etc.

2. Disease of myocardium, valvular disease, nephritis.

3. The condition of the good lung. This is of vital importance. The literature is full of such statements as "unilateral involvement."

Theoretically, this may be possible. Clinically, we have never had the good fortune to draw such a case. It seems to us the term inactive or arrested involvement of the "good lung" would be more accurate and just as impressive.

4. Age of patient.—It is impossible to fix the age limit for thoracoplasty, but certainly the young and advanced in years are not, generally speaking, suitable cases.

The operation of choice consists of collapsing the chest by resecting proportionate lengths of the ribs from the tenth through the first. Occasionally it may be necessary to resect the eleventh rib. The operation is carried out posteriorly, always including the angles of the ribs. The advantage of the posterior operation is that a greater collapse is produced. The amount of ribs removed is determined by the extent of collapse necessary and the condition of the patient. The operation should be done in one or more stages. Personally, we have done all of our cases in two or more stages. It is important not to shock your patient. If the question arises whether or not the patient will stand the removal of another rib leave that rib for the next stage of the operation. Trying to do just a little more furnishes the operative mortality. Tuberculous patients do not stand general anesthesia well. We prefer novocaine alone or combined with ethylene.

Post-operative treatment must be carried out in careful detail. Strapping the chest snugly will increase the amount of compression and also decrease the amount of pain. Morphine should be given freely for the first twenty-four hours. The patient should be encouraged to cough at intervals, and turned in bed several times during the first post-operative night and day. The purpose of this is to prevent an accumulation of secretion.

Certain adjuncts to the operation should be mentioned. Phrenicotomy is probably the most important adjunct to thoracoplasty. It has been used as an index to the patient's condition. If this minor operation was borne badly the major operation was not done. The usefulness of nerve clipping operations is on the increase. Alexander is advocating it as a routine procedure to replace the first stages of a thoracoplasty, namely, resection of the tenth to the sixth ribs inclusive. He argues that the same amount of compression is induced, that the chances for post-operative pneumonia are practically eliminated, and the operation itself causes no shock.

Apicolysis should be used in cases with stubborn cavities in the apex which are not collapsed sufficiently by thoracoplasty. Transplants of fat or muscles may be used as fills. One should be cautious not to injure the pleura during this operation.

We have done thoracoplasties on thirteen cases of pulmonary tuberculosis. It is an inspiring fact that no case has been made worse by the operation. Thirty-three per cent of our cases seem to be well. The remaining cases are improved with the exception of one death thirteen days after operation from pneumonia in the good lung.

We are convinced that as soon as this surgical procedure is thoroughly understood, so that such cases can be referred more promptly for surgical treatment, an increasing number will be cured and improved. Thus, a large majority of these heretofore hopeless victims of tuberculosis will be restored to their homes and even enabled to earn a living for themselves and their families.

DISCUSSION.

DR. GERALD A. EZEKIEL, *Richmond*: The question of collapse of the lung comes back, really, to the application of one of the fundamental principles in the treatment of tuberculosis, and that is rest, carried out over a sufficiently long time. If a patient has a sore eye, we can place a little patch over it and he can use the other eye. If a patient has a bad lung, it can be collapsed and he can go on leading his usual life. Of course, the first portion of the period of collapse should be spent as a bed case.

There is some prejudice on the part of patients to this treatment. In dealing with this work we have to be very conservative in the selection of cases, because, if we were to have a high mortality, it would soon go into disrepute. We have a disadvantage here that the surgeon does not have in other fields. They can experiment on animals, but here we can not do that. A good many of these cases are desperate, and are willing to undertake anything. They know what is staring them in the face, so we are justified in being a little radical at times, I think. One patient has had only the first stage of the radical operation, and his life has certainly been prolonged. Whether this is advisable or not we do not know. Certainly it has been worth while to his family. It may be that after a while he will be in better condition and can have the operation completed.

There is one point in the paper with which I should like to differ. That is, I do not believe a

thoracoplasty is advisable in a case of hemorrhage. This operation should not be done while shock is present, and the patient is certainly shocked after hemorrhage. Pneumothorax should be attempted. It used to be feared, at times, that putting a needle into the thoracic cavity would collapse the lung, but today we have no fear of such a collapse, and under novocain it can be easily accomplished.

Dr. Frank B. Stafford, *Charlottesville*: This subject of artificial pneumothorax and thoracoplasty is very interesting to me.

At Blue Ridge Sanatorium we have had for the last three or four years an average of about twenty cases of pneumothorax. This treatment is something that will benefit a patient more than would ever be thought until you have had some experience with it. We used to approach the subject with much fear and hesitation, lest we should not get the results hoped for. Naturally, the results to be obtained will, to a certain extent, depend upon the number of adhesions which exist between the visceral and the parietal layers of the pleura, which usually govern the degree of collapse. Often it will be found that, even though these adhesions are numerous, a small part of the diseased portion of the lung can be collapsed, and much benefit derived from it. It is surprising how many of these adhesions can be dissected loose by close observation of the patient and gradual increase of the air in the pleural sac.

As to the selection of a case suitable for pneumothorax, many points must be considered. If we wait for a strictly unilateral lesion (something that is seldom seen), very few cases will be selected. The stethoscope may not reveal involvement in the opposite lung, but the stereoscopic X-ray films usually clear up the situation and enable us to determine the character and extent of the trouble there.

In a large percentage of these bilateral cases, by a partial collapse of the lung containing the greater degree of involvement, and by putting the patient strictly to bed, the temperature will usually come down, acute symptoms will subside, and the tissues will have a chance to react from the absorption of tuberculous toxins; and the life of the patient may be greatly prolonged.

It used to be that after the treatment was well under way, and after the temperature had gone down for two or three weeks, we would allow the patient to be up and around on the pavilion and to go to the dining-room for meals. Recently we have found that, if the best results are to be accomplished, the patient should be kept in bed for two or three months. This procedure, I think, should be adhered to regardless of whether or not the patient has much disease in the opposite lung.

It is not always advisable to wait on the patient before considering collapse. Usually, if the symptoms, corroborated by the X-ray findings, indicate an acute type of the disease, then this form of treatment should be considered at once.

Dr. David Lyman, of Gaylord Farm, Wallingford, Conn., states that he has about ten per cent of his patients taking the pneumothorax treatment; also, that he often collapses a lung that has only a small amount of involvement, or in early cases; and that he gets much better results than to allow the patients to go on with the regular hygienic treatment as prescribed in the sanatorium. This has also been our experience at Blue Ridge Sanatorium.

Those cases where the adhesions are so numerous and extensive that pneumothorax can not be given, should, I feel, be considered for thoracoplasty. This form of treatment, generally speaking, is harmless, and it certainly offers an opportunity for a number of cases, suffering from this disease, to be restored to a life of usefulness.

Dr. F. S. Johns, *Richmond*, closing the discussion: I think Dr. Ezekiel misinterpreted my remarks about hemorrhage. In the first paragraph I said if there is a possibility of artificial pneumothorax bringing about the desired results, we do not do thoracoplasty. So, of course, in hemorrhage, if there is a possibility of artificial pneumothorax collapsing the lung, thoracoplasty is not done. However, in the stage between hemorrhages, if it seems that pneumothorax will not give further benefit, we can do the thoracoplasty.

PUERPERAL SEPSIS—REPORT OF CASES OF INTRAPARTUM INFECTIONS.*

By MILLARD B. SAVAGE, M. D., Norfolk, Va.

In this paper I wish to cover briefly a few points upon puerperal sepsis in general, and then, in conclusion, I have a few cases of puerperal infection intrapartum to report. These cases differ somewhat from the usual type of sepsis, and for that reason are interesting.

Puerperal sepsis, puerperal infection, puerperal or "child-bed" fever, in all probability date back as far as the history of human life and its procreation, and without doubt clinical types of it will exist as long as the race of man. With the dawn of the modern day, such men as Charles White, Semmelweis, Oliver Wendell Holmes and others have taught us the etiological factors in this long existing and dreaded disease. Equally important, the bacteriologists have demonstrated the very bacterial organisms which are the causative agents in this condition. Surely, from the teachings of these men which have shown us the how and why of puerperal sepsis, we have gathered some foundation for a prophylactic treatment against it. Yet, when one peruses the present day statistics upon the mortality rate from puerperal infection, one wonders if full advantage is being taken of our knowledge of prophylactic treatment for this condition.

Eichel,[1] in a statistical study of cases of puerperal infection in New York State, reports on 205 deaths which occurred during 1922 and 1923. In this study he obtained satisfactory explanation as to the cause of death in 72 per cent of the cases. About 34 per cent of the deaths followed abortions and miscarriages. Twenty-six per cent of deaths followed ob-

*Read before the Norfolk County Medical Society, February 22, 1926.

1. Otto Eichel. Amer. Jour. Obs. & Gyn. 1924. Vol. 7, p. 667.

stetrical operations, such as Cesarean section, version, and forceps delivery. Thirty per cent of the cases were classed as neglected cases, which included those cases where there was late interference and delay in the treatment. In commenting upon the statistics, a few of the recommendations to help remedy the present existing state were as follows: First, to educate the public as to dangers of abortion and the necessity for prompt care of these cases. Second, to educate the public as to the hazards of abnormal conditions connected with pregnancy. Third, to attempt to secure adequate clinical facilities for the poor. Fourth, to elevate the present standard of obstetrical training, and, lastly, for physicians to employ strict asepsis in all cases and to take particular care in those cases requiring interference.

Ronsheim,[2] in reporting six cases of puerperal infection, each of a different clinical type, gives an interesting classification of the various manifestations of the condition.

Septic endometritis begins with a chill and is followed by a moderate elevation of temperature. There is some pain in the region of the fundus. The uterus is large, tender and somewhat soft. Lochia is profuse, bloody and foul in odor. Improvement is rapid under appropriate treatment.

The bacteriemias have their onset with a severe chill and rapid elevation of temperature. As a rule, other chills do not follow. The pulse becomes rapid and thready. Headache, extreme weakness, insomnia, euphoria and mental confusion are usually constant. Positive blood culture completes the diagnosis.

Parametritis has a late onset, and the chill is not always distinct. The temperature is moderately elevated and there is pain and tenderness to one side of the pelvis. Bimanual examination reveals a mass of varying size in the adjacent tissue and to one side of the uterus, cervix or vagina. The region of the bladder and cul-de-sac are free. The mass is hard, immobile, tender and continuous with the uterus. Blood culture is negative.

Thrombo-phlebitis is characterized by its violent onset with a severe chill which lasts thirty minutes or more. The chills are repeated, the temperature shows extreme variations, and sweating is profuse and exhausting. The pain is low in the pelvis. Bimanual examination is usually negative beecause the process most often confines itself to the veins alone. Later, embolic processes appear. Positive blood culture may be obtained if taken during a chill.

Phlegmasia alba dolens is characterized by a pain beginning in labium and spreading to the thigh. The edema of the thigh is marked while the edema of the leg may be slight and late in appearing.

The clinical types just described may be grouped together because of their pelvic origin. Puerperal infection in a general way may also include intercurrent disease, breast abscess or other inflammatory process at the time of or following labor. The danger of intercurrent disease, particularly pneumonia, influenza, septic sore throat, or even "colds," during labor is well known and very much feared as a complication of labor. The cases of so-called autoinfection are rare but do occur. The prevention of this type of infection is a problem, and for just reason any ailment, trivial or other, occurring during late pregnancy should be regarded with suspicion and treated accordingly.

Puerperal infection may be classified as to the mode of infection. The infection may ascend through natural channels, the vagina and uterus, or it may descend through the blood stream or by contiguity. The ascending type is the more common, and the offending organisms, in the order of their frequency, are the streptococci, staphylococci, gonococci, colon bacilli, gas bacilli and pneumococci. A high standard in the practice of obstetrics can help reduce the ascending type of infection to a minimum. Rectal examination is preferable. Vaginal examination should not be frequent and should be employed under strict asepsis when necessary. The observance of some few precautions both prenatal and during labor should result in a marked decrease in our death rate during each year from sepsis.

The curative treatment of puerperal infection depends upon the clinical manifestation of the disease, the organisms which cause it, and the pathology which is present. In general, the conservative treatment is better. The antiseptic douche has been used without results. The curette has been used with dangerous results. General surgical principles apply to obstetrics as to any other pathological condition with localized pus. It should be evacuated. Vaccines, serums and intravenous

2. Joshua Ronsheim. Amer. Jour. Obs. & Gyn. Vol. 8, p. 363.

medications have been used frequently and results both good and bad have been reported.

Costain[3] and Edwards[4] have reported treatment of puerperal sepsis by means of draining the thoracic duct. By this means the toxemia from lymphatic absorption is relieved. In their cases they have recovered the same organisms in the fluid draining from the thoracic duct as were obtained from smears taken from the uterine cavity.

Both transfusions and dyes by intravenous route have been used very much in the treatment of infections.

Mendenhall, of Indianapolis, in a personal communication of recent date, comments upon the use of mercurochrome in obstetrics as follows:

"Mercurochrome is not going to solve all our problems and as yet I am not satisfied to use it in preparing a field for delivery. I had apparent success with the use of mercurochrome intravenously and at first was enthusiastic, but now I greatly doubt its value."

He believes that the most recent progress in the treatment of puerperal infection has been made by giving blood transfusions. Multiple small transfusions from 200 to 400 c.c. are more effective than one massive transfusion. The prophylactic treatment of puerperal sepsis is the most satisfactory treatment. Prevention should be the ideal of each one doing obstetrics, for the life of someone's loved one is at stake in every case of infection.

I have a few remarks to make upon infection intrapartum before making the case reports. Very little reference to it is made in the text-books, and only isolated cases may be found in the current literature. Its frequency may be much greater than would be expected, and diagnosis may not be made where temperature and pulse readings are not taken routinely before and after delivery. Williams[5] states that intrapartum infection may occur with slow labors and with premature rupture of the membranes. A temperature of 100.5 degrees F. and septic appearance should be an indication to hasten the evacuation of the uterus during labor.

Jewett[6] states that in a certain number of cases infection may occur before the birth of the child. These cases are designated as infection intrapartum. It usually occurs in slow labor where the membranes had ruptured at an early period. The temperature of 100.5 degrees F. should suggest the possibility of this complication and indicate necessity for the speedy termination of labor. Edgar[7] states that when symptoms of fever, increased pulse rate out of proportion to the fever, sensitiveness of the pelvic organs to pressure, disturbed involution, and diminution in amount of lochia occurred a few hours after labor, they are probably due to infection during or before labor.

Case 1. Para 6. Reported by Wolfe[8] as case of intrapartum and postpartum streptococcic septicemia of extrapelvic origin. Admitted to Dr. Polak's Clinic in Brooklyn, N. Y., on January 26, 1921. Had been under prenatal care for three months previously. Other pregnancies and labors had been normal. Three days previous to admission, patient developed a cough and sore throat. Labor began at noon January 26th. Was admitted to the hospital at 9 P. M. the same day. Temperature upon admission was 102 degrees F., and pulse rate was 116. Respiration was 24. Face was flushed and pharynx was injected. A few subcrepitant rales could be made out at both bases. Presentation was R. Sc. A. Cervix dilated to 3 c.m., and pains occurred every four minutes. Leucocyte count was 9,000 cells. P. M. N.s were 83 per cent. Labor proceeded satisfactorily during the night. At 8:30 A. M. on the following morning the membranes ruptured spontaneously and a living female child was delivered shortly afterwards. The child cried weakly but remained cyanotic. The third stage was uneventful. The progress of labor was followed throughout by means of rectal examination.

One hour after labor: The temperature was 104 degrees F, pulse rate was 130, and the respiration was 38. Examination of the throat revealed a white patch upon the left tonsil. The leucocyte count twelve hours after labor was 24,000 cells and 85 per cent P. M. N.s.

The child remained dyspneic from birth and died in fourteen hours. Autopsy diagnosis: Septicemia and broncho-pneumonia of more than fourteen hours' duration. Organism present was hemolytic streptococcus.

The puerperium was long and stormy. The temperature during the first three days varied from 100.8 to 104.2 degrees F. Pulse varied

3. Costain. Surg. Gyn. & Obs. 1923. March.
4. A. C. Edwards. Surg. Gyn. & Obs. 1924. Vol. 38, p. 257.
5. Williams. Text-Book on Obs., p. 956.
6. Jewett. Text-Book, p. 590.
7. Edgar. Text-Book p. 723.
8. Samuel Wolfe. Amer. Jour. Obs. & Gyn. 1924. Vol. 7, p 97.

from 120 to 140. Respiration varied from 30 to 40. During the fourth to the tenth days severe septic intoxication was present with occasional attacks of mania. The throat remained infected and culture from patch on tonsil was positive for staphylococcus and hemolytic streptococcus. Smear taken from the cervical canal was positive for hemolytic streptococcus. A blood transfusion of 300 c.c. of blood was given on the fifth day and a second transfusion of 275 c.c. was given on the ninth day. From the tenth day the throat and lung symptoms began gradually to disappear. Good involution of the uterus occurred and the lochia was scant by the tenth day. Later numerous metastatic abscesses of the buttocks, thighs, legs and arms developed and were drained by multiple incisions. Cultures from the pus were positive for hemolytic streptococcus. The patient was discharged on the seventy-seventh day after labor.

In this case a streptococcic sore throat and tonsillitis produced an antepartum bacteriemia and fetal infection before birth. The pneumonic process in the lungs of the child was demonstrated as interstitial in character and differed from the aspiratory pneumonias. The maternal bacteriemia persisted after labor, and the streptococcus hemolyticus was found present in the uterine cavity by the fourth day of the postpartum. A similar organism was obtained by blood culture on the seventh day, and a clinical course of septic pyemia followed. Similarity in morphology and sugar fermentation of the bacteria which were recovered from the mother's throat, the blood stream, the uterus, and the fetus, suggested auto-infection from a common source, the throat and tonsil.

Case 2. Para 2. White. Admitted to clinic of Protestant Hospital at 3 P. M. on August 15, 1924. Previous pregnancies were normal other than history of two still-births. Patient gave a history of onset of labor seven days previous to admission to the hospital. Membranes had ruptured five days previously. Several vaginal examinations had been made daily by family physician. Labor had not progressed. Patient had not felt any fetal movement for three days before coming to the hospital. When first seen, the temperature was 101.4 degrees F., and pulse rate was 120. There was a dark bloody fluid discharge at intervals from the vagina. The odor of the discharge was offensive in character. The labor pains were intermittent but uterus was in a tonic contraction. Cervix was dilated from two to three fingers. A No. 5 Voorhees' hydrostatic bag was inserted through the cervix and five hours later the bag and a macerated fetus were expelled. The placenta was delivered by manual extraction one and one-half hours later. A Bandl's contraction ring was present and deep ether anaesthesia was necessary in order to extract the placenta.

When the labor was terminated, the temperature of the patient was 105.4 degrees F., and the pulse rate was 140. One hour after labor the temperature was 103.4 degrees and the pulse rate 160.

During the first day after labor the patient became very toxic and delirious. Thirty c.c. of 1 per cent mercurochrome solution was given intravenously and 1,500 c.c. of normal saline was given subcutaneously. The temperature was subnormal and the pulse rate varied from 120 to 150.

During the morning of the second day of postpartum, a uterine hemorrhage of moderate severity occurred. Uterus was packed to control the hemorrhage. Blood transfusion of 500 c.c. was given in the afternoon. Patient died during the night. Laboratory reported negative blood culture, negative Wassermann, and 6,000 leucocytes. Autopsy diagnosis: Acute pelvic peritonitis and extensive infiltration and necrosis of the uterine wall.

This case is somewhat illustrative of the text-book description of infection intrapartum. There was a prolonged complicated labor, an early rupture of the membranes, potential infection by early and frequent vaginal examinations, and lastly interference was late and complications neecessitated repeated invasion of the uterine cavity where infection lurked.

Case 3. Colored. Age thirty-eight. Para 2. Previous normal pregnancy had occurred seventeen years before. History of onset of labor pains on June 29, 1925. Patient was attended by a midwife. Physican was called in on fourth day of labor. Patient seen at noon July 3rd. Was having pains every five minutes. Contractions were strong. Temperature at that time was 102 degrees F. Pulse rate was 120. Patient was an extremely fat person and abdomen was very prominent. Height of fundus measured 45 cm. History of mem-

branes rupturing two days previously was given. No fetal heart could be heard and fetal movements had been felt somewhat feeble for twelve hours. Rectal examination revealed a large caput and the fetal head about mid-pelvis. Cervix was three or four fingers dilated and very much thinned. Patient was given one-quarter grain of morphine sulphate and left with the expectation of delivery to occur spontaneously in five or six hours time. Patient was seen again at 9 P. M. that night. Progress had been slight. Temperature was 103 degrees F. Pulse rate was 140. Cervix was completely dilated. A hard mid-forceps delivery was done with the Scanzoni method of rotating the occiput posteriorly. Delivery required forty-five minutes under chloroform and ether anesthesia. A still-born male child, which weighed fourteen pounds was delivered. Episiotomy was done to facilitate birth of the head, and the incision was enlarged to facilitate the birth of the shoulders. Shoulders were also delivered by application of the forceps. Third stage was uneventful.

One hour after labor temperature was 99.2 degrees and pulse was 100. Patient rational and comfortable.

During the first day after labor, temperature dropped to 98 degrees F., and pulse gradually increased to 120 and 140. Pulse became irregular. No odor to the lochia, which was slight. Patient complained of severe pain through the abdomen and down the left leg. Patient died rather suddenly in the afternoon before a physician could be called. No autopsy was obtained.

In this case there was a prolonged labor due to an excessively large baby, the membranes ruptured early, infection was potential from examinations of the midwife, and late interference, together with a difficult forceps, added the necessary factors to add this one more case to our high mortality rate from puerperal sepsis. 400 *Fairfax Avenue.*

SIMPLE EXPLANATION

A colleague of Dr. Crun Brown, the famous Edinburg professor of chemistry, once came to him concerning an Indian medical student whose English was defective.

"We cannot pass this man," he said. "He is quite illiterate; he simply cannot spell. Why, he has spelt proceed with one 'e'."

"From what place does he come?" asked Doctor Brown.

"From Ceylon."

At once Doctor Brown flashed back: "That explains it. That's the land of the Cingalese."

EXCESSIVE VOMITING OF PREGNANCY.*

By L. A. CALKINS, M. D., Ph. D., University, Va.

This discussion is given under the caption "Excessive Vomiting of Pregnancy" because that would seem to be a better term than Hyperemesis Gravidarum, or even Pernicious Vomiting of Pregnancy. Approximately 50 per cent of women will have a greater or less degree of nausea and vomiting at some stage of their pregnancy. On the other hand, it is not an every-day occurrence for us to see a really pernicious case. In between the mildest disturbance and the most severe one are all possible gradations of involvement. It would seem, therefore, that the differentiation of ordinary vomiting of pregnancy and pernicious vomiting of pregnancy were only a matter of degree. Hence, the term "Excessive Vomiting of Pregnancy" would, theoretically at least, seem preferable to the other terms more frequently used.

I shall attempt to include in this discussion all cases of vomiting and not limit it to the excessive vomiting type except insofar as the more severe cases require a more elaborate treatment than the milder ones.

The etiology of this condition is as yet poorly understood. It has long been classed with the toxemias because it seem to be brought about by some toxin, and also because this is a convenient sort of description for almost any condition that we cannot otherwise explain. In recent years the suggestion has been made by Dr. D. J. Harding, and his co-workers of Toronto, Canada, that there is a depletion of glycogen in the liver. This hypothesis, although not definitely proven, has met with quite ready acceptance, and, on the basis of this theory, the treatment has come to involve the use of both glucose and insulin by many workers. More recently dehydration has been thought to be a factor, and the treatment has been made to include the giving of large amounts of fluid. Previous to these two ideas we attempted to class these cases as toxemic, reflex, or neurotic in type, and there are still many who believe that the neurotic element is the most prominent predisposing cause for this condition. There is one other possibility in etiology that has not received very serious consideration, namely, protein intoxication

*Read before the Norfolk County Medical Society, February 22, 1926.

through the intestinal tract, such as we get in many other conditions of intestinal stasis or partial intestinal obstruction. That toxemia from such a cause can occur, is beyond question. Just why such an intoxication should occur during early pregnancy without a previous intestinal disturbance is not at once apparent, but the symptoms and course of these vomiting cases strongly suggest such a possibility.

The course of vomiting of pregnancy is so well known to all of you that it is not necessary to restate it in detail. It might be well to outline certain characteristics. The first, or mild stage of the condition, is very amenable to mild measures in the way of treatment and does not possess any serious aspects as far as the patient is concerned. The great difficulty is that women have been gradually trained over a period of centuries to the idea that vomiting is a necessary part and parcel of pregnancy, and that there is nothing to do but grin and bear it until they get far enough along that it will automatically disappear. As the result of this training and belief, they very frequently do not report their condition to their physician until they have become considerably worse, when they might be said to be in the second or moderate stage of the disease. During this stage they vomit from one to several times a day, and become gradually, but nevertheless certainly, worse. Fortunately, many of them improve. This second stage of the disease is comparatively long, and, with proper treatment, can be quite readily managed. Much more rarely we see people in the so-called third stage, which can be determined as being present only by elaborate chemical tests. This stage is almost uniformly fatal. If the patient has progressed to this third stage, therapeutic abortion, or any other measure, cannot save her. Previous to going into this final or third stage, therapeutic abortion gives good results in the way of recovery, which is definite and prompt. We have, therefore, for a hundred years been performing therapeutic abortions for this condition, and, I am sorry to say, are still performing them because of the lack of knowledge of any other satisfactory treatment that is uniformly successful.

My only excuse for appearing before you and giving this paper is to offer another treatment which, in the hands of many men, has proven eminently successful, and which, in their hands, has obviated the necessity of performing a therapeutic abortion on these women. This treatment is not new, nor have I had any part in developing it. It was taught to me as a medical student by Dr. J. C. Litzenberg, of Minneapolis, who has used it routinely and successfully for about twenty years. During those twenty years he has had one failure, where a therapeutic abortion become necessary. I have had the opportunity of using this treatment on approximately two hundred cases, and, so far, have not had a single failure. There were a few cases in the group which were improved only. The great majority should be called cured. I shall first give you the routine employed in the severe cases:

They are put to bed, either in the hospital or in the home, and the lower bowel thoroughly cleaned out by repeated enemata. Then, after a period of a couple of hours, the definitive treatment is begun. They are given by rectum 60 grains of sodium bromide in two or three ounces of water. This medication is repeated every six hours so that the patient receives four doses of 60 grains, a total of 240 grains, in each twenty-four hours. It is usually necessary to place the patient on complete starvation for the first twenty-four hours, neither solids nor liquids being allowed. This will serve to stop the retching which may otherwise continue. At the end of the twenty-four hour period feeding is begun. At first small amounts of either liquids or solids are allowed, as desired by the patient. The heavy doses of the bromide are continued for a varying period of time, according to the severity of the vomiting and the response of the patient. It is very important that the patient receive the full 60 grains at each dose and that the doses be repeated at each six hour interval in the beginning. A dose of 50 grains does not seem to suffice, nor is it satisfactory to give four doses during the waking hours and allow a longer period or interval to elapse during the night. Usually the patient will be so well under the effects of bromides after two or three days that the dose can then be gradually diminished. We usually drop down to a 50 grain dose; then, after a period of another two or three days, to a 40 grain dose; and then, at the next step, begin giving 20 grains by mouth, preserving the six hour interval as nearly as possible. During this time the feed-

ing is increased and the patient rather rapidly gotten up to a truly high carbohydrate diet. Co-incidentally with this increase in diet, we attempt to increase the fluid intake as well, in order to combat the dehydration which is theoretically present.

Most of these patients, before treatment has been started, have lost a considerable amount of weight. This weight loss is best restored by a high intake of fluids and carbohydrates. I usually tell these people, much to their surprise, that their husbands may bring them a box of candy. The period of rest in bed is well advised because in that way the full effect of the increased diet can best be obtained. A week or ten days is the usual rest period necessary.

Most of these people cease vomiting before the third dose of bromide has been given and do not vomit thereafter. It is not at all uncommon that no further vomiting occurs after the first dose of bromide is given. It is necessary at this point to sound two warnings: First, that the dosage must not be decreased too rapidly, and, second, that it should not be stopped too soon. I have given above the usual method and way of decreasing the dose. It remains to say that the medication should be continued in small doses, 10, 15 or 20 grains three times daily, over a period of two to six weeks after the heavy medication has been stopped.

The milder cases can be quite satisfactorily treated, although with not as brilliant results, by a less vigorous regime. Where the vomiting occurs only once a day or the patient is suffering from a nausea only, we usually do not feel like insisting upon the full treatment outlined above, and attempt to go part way by merely prescribing a high carbohydrate diet and bromides in 15 or 20 grain doses by mouth. These people are nearly always improved, but are not as quickly nor as thoroughly cured by these measures as are the severe cases.

I feel that this bromide treatment is an empiric form of treatment and that we have no sound scientific basis for it. My only answer for being unscientific in this matter is that the results speak for themselves, and, until something more scientific can be developed, I cannot help but feel that, if therapeutic abortions can be prevented by using this treatment, we are thoroughly justified in employing it. I have no hesitancy in stating that therapeutic abortions will be rarely, if ever, neccessary, if this treatment is carefully followed. Moreover, it would seem to be unnecessary for patients to be told that there was nothing to be done for them when they are suffering from so-called "morning sickness." Finally, in this, as in many other medical conditions, the earlier treatment is begun, the more ready and more certain is the relief obtained.

PARTIAL GASTRECTOMY UNDER LOCAL ANESTHESIA FOR CANCER OF THE STOMACH IN A MAN 71 YEARS OF AGE.*

By J. SHELTON HORSLEY, M. D., Richmond Va.
(From the Surgical Department of St. Elizabeth's Hospital).

In cancer of the stomach only one therapy is known to have cured, and that is surgical excision of the cancer. Whatever may be the different views about the treatment of peptic ulcer, the opinion is unanimous that cancer of the stomach if not too advanced calls for gastrectomy. Gastric peptic ulcer is undoubtedly an etiologic factor in cancer of the stomach. This is universally acknowledged, but the proportion of cases of gastric cancer that have their origin in peptic ulcer is disputed. Some say it is not more than 10 per cent. At the Mayo Clinic the ratio at one time was given as high as 70 per cent. Cancers elsewhere in the body often arise from points of irritation; a cracked lip or tongue, an old scar, a wart or mole that is frequently irritated, are all well-known starting points of malignancy. It seems entirely logical, then, that we should expect gastric peptic ulcer at least occasionally to give rise to cancer of the stomach.

Any gastric ulcer that attains the size of an inch in diameter is always suspicious of cancer. The advisability of excising a gastric ulcer as a prophlaxis for cancer must be borne in mind. Unless the ulcer is followed very carefully from its inception, it is impossible to say what changes may take place. I have had in my own experience a patient who developed cancer of the stomach after having a history of recurrent stomach pains relieved by food and alkali off and on for thirty years. Though duodenal cancer occurs, it is very rare, so extirpation of a duodenal ulcer is hardly an indication as a prophylaxis for cancer.

Patients with cancer of the stomach are

*Read before the Richmond Academy of Medicine, Richmond, Va., April 13, 1926.

usually bad risks. They bear a general anesthetic poorly. No matter how safe the general anesthetic may be under ordinary conditions, any therapeutic agent that is sufficiently powerful to produce and maintain general analgesia and unconsciousness must have some reaction. So it is particularly in these patients that a local anesthetic finds an appropriate field.

The type of operation to be done is, of course, an important factor. Formerly, following the general trend, I did the anterior Polya or the Polya-Balfour operation, in which, after removing the pyloric portion of the stomach, the jejunum is brought over the transverse colon and sutured to the cardiac stump of the stomach. While it has some apparent advantages in permitting more of the stomach to be resected and in shortening the time of operation, the principles on which it is founded are not, on the whole, so satisfactory as those of the original Billroth I and the Billroth II operations. A loop of jejunum that goes over the transverse colon has potentialities for trouble. There may be a kink or obstruction, and if an entero-anastomosis is made between the limbs of the loop much of the duodenal contents is diverted from the stump of the stomact. This predisposes to jejunal ulcer. The natural mixing chamber for the gastric contents and the duodenal contents is in the duodenum, and the general principles of the Billroth I operation, in which the stump of the stomach is anastomosed to the stump of duodenum, are founded on this good physiologic principle. The space beneath the limbs of jejunum that go over the transverse colon offers decided opportunities for loops of bowel to insinuate themselves in it and cause obstruction.

One of the two chief objections to the Billroth I is that the anastomosis in the orginal Billroth I was along the greater curvature of the stomach. This made closure at the upper portion of the duodenal stump difficult, and frequently there was leakage in this area. It was called the deadly triangle. The general axis of peristalsis is along the lesser curvature of the stomach, and the researches of Alvarez, and recently of Eugene Klein, of New York, have shown that the lesser curvature appears to contain a type of neuromuscular tissue in which gastric peristalsis seems to originate. An ulcer along the lesser curvature will produce contraction of a segment of the stomach corresponding to the ulcer, and frequently will form an hour-glass stomach, when a similar lesion along the greater curvature may have but little effect and often gives no symptoms. Consequently, I have modified the Billroth I operation by making the anastomosis along the lesser curvature of the stomach instead of along the greater, and have added another modification in incising the anterior wall of the duodenum for an inch or an inch and a half, and flaring it open, so avoiding the second chief objection of a possible constriction at the point of anastomosis which ordinarily might occur when the thick wall of the stomach is sutured to the thin duodenal wall. Then, too, it is easier and safer to fold in the lower teat of the stomach and to bring peritoneal covered fat over this region along the lower border of the duodenum, as is done in this modification, than it is to suture the upper end of the duodenal stump to the redundant upper portion of the gastric stump as must be done when the anastomosis is made at the greater curvature.

In most cases of partial gastrectomy the stump of the stomach can be united to the duodenum. Finney has done a total gastrectomy, uniting the esophagus to the duodenum end-to-side. In such a case, to be sure, there is great contraction of the stomach and the esophagus has been elongated, but it shows the possibility of this principle. It seems best, however, to disturb the duodenum as little as possible, though by mobilizing the end of its stump some increased length can be obtained. The main dependence, for approximation without tension is placed on mobilizing the gastric stump, which is more easily done and with less disturbance to the tissues. After dividing adherent bands the gastric stump is brought over, still clamped with the Payr clamp, and the posterior wall of the stump of the stomach is sutured to the posterior wall of the stump of the duodenum in such a manner that the lesser curvature of the stump of the stomach will be in line with the upper border of the duodenum. The clamps on the stomach and on the duodenum are then removed and the posterior margin of the stump of the stomach is united to the posterior margin of the stump of the duodenum with a continuous lock-stitch of No. 1 tanned catgut—beginning at the lesser curvature. When the lower border of the duodenum is reached, an incision about an

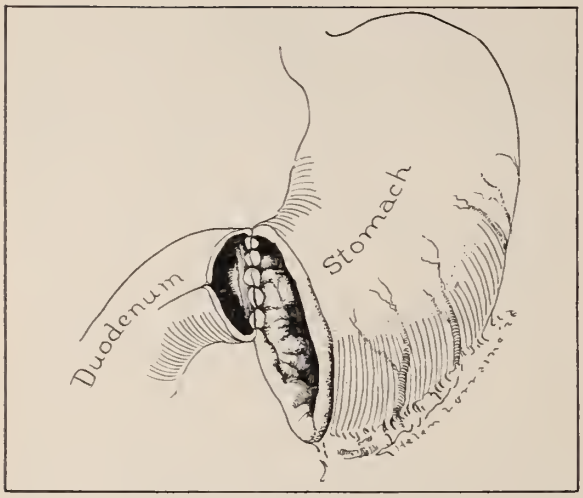


Fig. 1.—This outline shows the main features of the modified Billroth I described in the text. The anastomosis is made along the lesser curvature, which is the main axis of the peristalsis. An incision from an inch to an inch and a half is made in the anterior wall of the duodenum in order to flare it open and avoid constriction at the anastomosis.

In some cases in which a limited pylorectomy is done, the duodenum may be united to the whole caliber of the stomach, but as a rule this is unwise because a sufficient amount of stomach should be excised even with an ulcer in order to take in at least a portion of the cardiac portion of the stomach. The suture is continued over the rest of the gastric stump, merely approximating the margins.

Anteriorly, another suture begins above, with the knot tied on the mucous membrane, and is carried down as a baseball stitch, approximating the anterior margin of the stump of the stomach to the anterior margin of the stump of the duodenum. The baseball stitch has distinct advantages, not only in producing hemostasis and approximating the cut margins, but in avoiding leaving a ridge of tissue which occurs when a continuous lock-stitch is placed anteriorly. This ridge is sometimes

Fig. 2.—External view of specimen removed from patient, Mr. C. L. W. The cancer is in the pyloric portion of the stomach and appears as a firm, infiltrating, mass in the anterior wall.

inch or an inch and a half long is made in the anterior wall of the duodenum, so flaring it open and permitting several more stitches that unite the posterior wall of the stomach to the posterior wall of the duodenum. (Figure 1.) difficult to bury without inverting a large amount of tissue. This suture ends at the lower border of the duodenum. The teat left at the lower border of the stump of the stomach is inverted by a purse-string suture of OO tanned

catgut, and the end of this suture is continued anteriorly as a right-angle continuous suture, with back-stitches at intervals, burying the baseball stitch and terminating at the lesser curvature. One or two additional sutures of catgut are placed along the lesser border, drawing over the stumps of the gastro-hepatic omentum at this point. Some peritoneal covered fat is sutured over the region where the lower border of the duodenum joins the stomach.

Since January 1, 1924, I have abandoned the Polya gastrectomy, and have been uniting the stump of the stomach to the duodenum. Since that time I have done fourteen partial gastrectomies. In three of them the stump of the stomach was united to the side of the duodenum, after mobilizing the duodenum, according to the technic devised independently by Finney and by Haberer. While these patients recovered, two of them had considerable difficulty in the stomach emptying. In eleven patients I have done the modified Billroth I, as described.

Of this total number, ten operations were for ulcer, one was for torsion of the gastrohepatic omentum along the lesser curvature, and three were for cancer. All of the patients made a satisfactory operative recovery except one in whom there was very extensive cancer of the stomach with adhesions to the pancreas. After resecting the stomach, a portion of the pancreas was removed. The mass on the pancreas proved to be inflammatory infiltration, doubtless partly a saprophytic infection from the sloughing tissues of a very extensive can-

Fig. 3.—Internal view of the specimen shown in Figure 2. The ulcer is rather shallow with firm margins and the growth infiltrates extensively down to the pyloric sphincter. It has caused almost complete occlusion of the pylorus. The stomach was opened from behind so this drawing shows the pylorus to the right.

cer of the stomach. Removing this portion of the pancreas stirred up the inflammation, activated the wound in the pancreas, and resulted in sepsis and death. In this case the operation was done under ethylene.

Another case of cancer of the stomach in a man sixty-nine years old with an aortic lesion was operated upon by this technic under local anesthesia. He made a very smooth operative recovery. His pulse during and after operation did not go over 90. For several months after leaving the hospital his condition was good, then metastases in the liver began to make their appearance and he died.

The third cancer case, Mr. C. L. W., age seventy-one years, was admitted to St. Elizabeth's Hospital on December 27, 1925. Roentgenologic examination by Dr. Wright Clarkson, of Petersburg, disclosed almost complete pyloric obstruction. After five days Dr. Clarkson still found about one-fourth of the barium meal still in the stomach. The patient appeared cachectic and his general condition poor. As the obstruction was almost complete, operation was undertaken with a view of doing a gastroenterostomy if exision was impossible The patient was operated upon on December 29, 1925, under local anesthesia. The stomach was washed out about two hours before the operation. The stomach was somewhat distended, but it was thought to be fluid and gas.

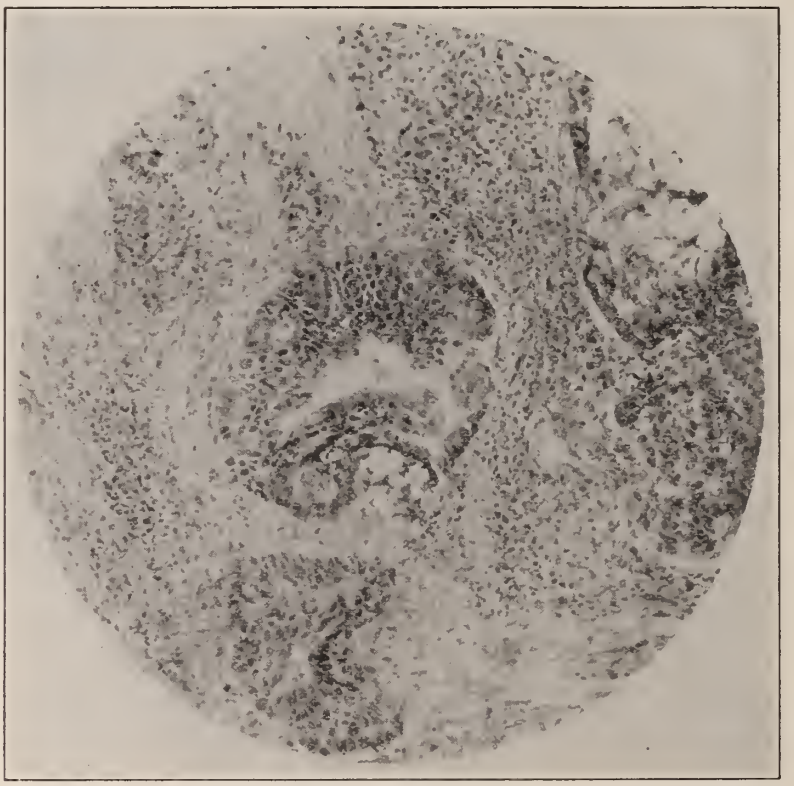


Fig. 4.—Photomicrograph of cancer of the stomach of Mr. C. L. W., shown in the two preceding figures. In the center of the photomicrograph is a mass of cancer cells arranged as an acinus. Some of the cells are fairly well differentiated. There are many layers in the acinus. In the lower right-hand margin of the picture some of the cells have undergone colloid degeneration. (X 150).

After resecting about one-half of the stomach, the posterior wall of the stump of the stomach was united to the posterior wall of the stump of the duodenum. After packing around the tissues with moist gauze, the Payr clamps were released. The stomach at once poured out about a half-pint of thick fluid with lumps of solid material floating in it. It was expected that the gastric contents would be liquid and gas that could be readily drawn off with the suction apparatus. But as this could not be done, the stomach was emptied by scooping out the material with the hand. Though the surrounding tissues were well protected with gauze, infection was naturally feared. The rest of the operation was completed in the usual manner, local anesthesia being used

throughout. The patient's pulse was 72 at the beginning of the operation, and 80 at the end. At no time was it higher than 80.

The specimen consisted of the right half of the stomach and measured along the greater curvature 23.5 cm. About 2.5 cm. of duodenum was attached to the pyloric end of the stomach. In the anterior wall adjoining the pylorus was an infiltrating mass which within the stomach showed as an ulcer with firm margins and infiltration which produced almost complete occlusion of the pylorus. The ulcer was shallow, and the infiltration extended to the pyloric sphincter not only in the anterior

Fig. 5.—Roentgenogram of stomach of Mr. C. L. W., about three months after the operation. The picture was taken by Dr. Wright Clarkson a few minutes after the ingestion of a barium meal. The stomach is emptying along the lesser curvature and in six hours after the barium meal the stomach was entirely empty. The patient with ordinary diet has no gastric symptoms.

wall but along both the greater and lesser curvatures. Microscopic examination showed adenocarcinoma of moderate malignancy with some tendency to colloid degeneration. The lymph nodes along the greater curvature of the stomach in the specimen showed cancer. A few lymph nodes along the lesser curvatures were enlarged and soft and on microscopic examination showed mere hyperplasia without cancer. (Figs. 2, 3, and 4.)

The wound healed satisfactorily with the exception of a slight skin infection. The patient was discharged from the hospital on January 29, 1926. His temperature never rose above 99.5 during his stay in the hospital, nor was his pulse above 100.

This case is interesting because the age of the patient, the almost complete obstruction, the apparent cachexia, together with the presence of secondary anemia and a slight chronic nephritis, constituted what would ordinarily be considered an exceedingly bad risk. His general health now is excellent. He has no symptoms of stomach trouble, and eats average meals with comfort. He has gained sixteen pounds in weight. Dr. Wright Clarkson examined the patient roentgenologically on March 16, 1926, and reported that the remaining portion of the stomach is normal and the communication with the duodenum is functioning perfectly. (Figure 5.) After six hours the stomach was empty of the barium meal.

Too often cases of cancer of the stomach are abandoned as hopeless as soon as the diagnosis is made. A more careful consideration of gastric symptoms in persons "within the tropic of cancer" and a prompt exploration of any suspicious case will undoubtedly result in a cure of many of these patients who are now utterly abandoned.

617 *West Grace Street.*

THE FUNCTIONAL DISORDERS.*

By BEVERLEY R. TUCKER, M. D., Richmond, Va.
Professor of Nervous and Mental Diseases. Medical College of Virginia.

The question of whether true functional disease exists is an old one still under debate. In late years certain neurological diseases, paralysis agitans, chorea and epilepsy, for instance, have been transferred from the functional to the organic classification, while, on the other hand, the functional classification has been enlarged by the recognition of various conditions of psychogenic origin.

The discovery of endocrine dysfunction, the investigations in blood chemistry and the eradication of focal infections have tended to eliminate the old diagnoses of brain-fever, neurasthenia and reflex conditions, and changed our conception of many disorders of established diagnosis. The time has nearly arrived when we may be able to make an entirely new classification of nervous and mental conditions, but I have no intention of entering into any such ambitious program. I do consider, however, that it is important for all

physicians to attempt to obtain a general idea of the modern conception of what may constitute a functional disease or disorder. Only the osteopath and the chiropractor have the optimism to attribute "every ill the flesh is heir to" to a definite organic condition, and how comforting it must be to hang all these ills on a dislocated vertebrae!

Of the cause of three mental diseases, dementia praecox, paranoia and manic depressive psychosis, we know practically nothing except that Nolan D. C. Lewis has found underdeveloped circulatory apparatus in dementia praecox. As insanity is simply a departure in degree from sanity there are various shades of mental perturbation in developing or undeveloped stages of these three mental conditions for which we have no adequate organic explanation and which may be considered functional. The danger of a functional case developing into one or the other of these psychoses should always be borne in mind.

The modern release of restrictions on women, it would seem, should lessen the frequency of hysteria and other psychoneuroses though apparently it has not, but rather increased their frequency. This is due, we believe, to the fact that woman has suddenly, out of the suppression of the centuries, been brought to face phases in life and situations for which she has not only never been trained but hardly contemplated. What the eventual outcome will be it is hard to say, but there will be a good many years yet of attempted adaptation to these new responsibilities and situations with which many will be found unable to cope and to which they will react by various and sundry functional disturbances.

But to proceed, an organic disease is one that has a demonstrable pathological lesion and a functional disorder is one that has no pathological lesion. A man may claim, from a railroad accident, to have lost the use of his arm from a blow on his shoulder. If the injury is organic, there would be evidence of maceration of tissue and possibly external signs of trauma, and these might be accompanied by the subjective complaints of pain, numbness or anesthesia. If there was no evidence of injury, the loss of power, the pain, the anesthesia or what not, might be hysterical, due to subconscious autosuggestion. If the case was one of malingering, there would be a conscious assumption of these complaints, but back of this faking there is at least a moral defect which may, in turn, be due to, for example, a birth hemorrhage; in other words, the malingering might be due to a remote, though genuine, organic lesion. Any case which has a moral defect setting and an organic background is both difficult to fathom and to correct, but an attempt should be made. One of our cases, a boy of ten, whose school record had been poor, had encephalitis. After his recovery, he became brilliant in his studies, but began to lie and steal, which traits he had never exhibited before. He was arrested after having stolen a horse and buggy and sold it for ten dollars. We made the diagnosis of encephalitic adhesions to the frontal lobes and endeavored to induce two eminent brain surgeons to operate upon him. They both refused and the boy is now, though he probably has a helpable organic lesion, in a state reformatory.

It is well known that certain situations are such that they may cause reactions which so closely resemble organic symptoms that their differentiation is, at times, impossible.

An individual may be placed in a situation from which there is no escape and the situation may be so intolerable that he may react by having a convulsion. Just as business reverses, love affairs, domestic difficulties or the fear of disgrace may drive one to suicide as a means of escape, so similar situations may drive others to consciously or subconsciously seek their escape in narcotism, alcoholism, sensuality, dangerous adventure or crime; others may resort to the functional simulation of illness, paralysis or psychosis; others may exhibit a changed personality manifested by suspiciousness, seclusiveness, or indecision; others may get up an emotional instability shown by resentfulness, irritability, apathy, tantrums or tears. To illustrate, there is an unwritten normal reaction to every situation, and it is generally understood what an under- or over-reaction would be. If a man was to meet another who would call him a liar he could react by striking him in the face or by calling him another liar or something worse, either of which might be considered within the normal limits of reaction. On the other hand, if he were to swallow the insult and slink off, he would be under-reacting, while if he were to leave, obtain a pistol, lie in ambush and shoot the man who called him a liar, he would be over-reacting. About two

years ago we had brought into the sanatorium, six weeks after the birth of her last child, a woman with all the clinical appearance of a post-puerperal psychosis. She refused to eat or speak and lay in a fixed position in bed. After weeks of elimination and other treatment without avail, an investigation of her home life was made and it was found that she was doing all the housework, cooking and nursing for her four young children and two invalid members of the family. When it was told her that she was not physically ill but simulating death because she would not face her situation, and when she was promised that the invalids would be moved away and that she would have servant help, she promptly recovered and has remained well. Recently another woman with an over-taxing home situation was brought in with the diagnosis of tetany, but her attacks were in reality hysterical. These attacks ceased on the promise of relief in her home situation.

Just as a patient may develop a permanent habit spasm of the neck, of the face or of the eyelids, from the transient irritation of a frayed collar, an abrasion in the nose or a cinder in the eye, so may an inferiority complex, impotence or phobia develop from one punishment, one sexual failure or one fright.

An excuse or compensation complex, for instance when an individual substitutes some physical weakness or illness as an excuse or compensation for some situation or overt act or acts, may develop into syphilophobia, contamination fear or hypochondriasis. One woman, who did not care for her husband, vomited until she had the idea that she had serious stomach trouble. The vomiting was an excuse for not carrying on the functions of a wife. An estimable old maid, who in her youth committed a minor indiscretion, picked sores on her skin which she exhibited to various doctors as an evidence of syphilis. These cases are not unusual. Other somatic delusions and transferences may amount to hypochondria. Desire and wish complexes may have similar substitutions and transferences, a familiar example of which is the pseudo or hysterical pregnancy.

In view of the foregoing statements, it would be very hard to successfully contend that there is no such thing as a true functional disorder. It is not impossible for an organic disease to have an added functional feature. We recently had a case of hysteria under observation. Because of these attacks, the girl's father induced her fiance to break his engagement with his daughter. The girl became very indignant and she became so emotionally upset while writing a letter to her mother about it that she had a genuine epileptic convulsion. It was one of those rare cases in which both epilepsy and hysteria were present. Patients, at times, with organic lesions exaggerate their complaints to so great an extent that a portion of their symptoms become functional.

Certain personalities are much more subject to functional disorders than others. It is from the study of these personalities that much future knowledge is to come. Instances of domestic, sexual or financial difficulties, that may act as an inciting cause of a functional upset in susceptible people, may occur to all of us, but, fortunately, most individuals have a power of nervous and psychic resistance sufficient to enable them to combat, or adjust themselves to their difficulties. Those who are more apt to succumb to the exigencies of life are those who are sensitive, emotional, reserved, bashful, pampered, self-centered, self-conscious or over-consciencious, and those who are delicate, undernourished, anemic or who have sexual unbalance and the women who suffer from menstrual disturbance. Over-careful rearing, excessive religious exercises, lack of ordinary sex knowledge, improper dietary, restricted social intercourse, being an only child, lack of fresh air and exercise and inattention to bodily habits tend to create or accentuate this susceptible type of personality. Incomplete recovery from childhood or other diseases and inattention to focal infections are also important factors. Association with neurotics, over-study at school, excessive loss of sleep, improper reading, poor movies and unregulated parties also have an influence. But there may be, and I believe there is, in the majority of people who are susceptible to functional upsets, something deeper still than most of these things. There appear to be certain hereditary strains that produce individuals attuned to neuroses and psychoneuroses. Through some combination of protoplasmic elements, or constitutional disease, or improper body chemistry, or defect in brain tissue structure, there appear various types of personality who are candidates for functional diseases. This does not preclude, but rather confirms

the fact, that some of these types have a toxic, some an endocrine, some a disturbed visceral, and some an anatomical abnormality basic factor.

Cases with an hereditary potentiality belong to those families known as neurotic and tend particularly toward the various forms of hysteria. They have to be protected in one way or another by the more substantial members of the family and connection. With guidance and care they can usually go through some sort of hot-house existence and may be made limitedly useful and ornamental.

Those who have a disease or toxic basis need, of course, careful medical investigation and supervision in order to raise their physical status to as high a level as possible, and then the attempt should be made to eradicate their functional difficulties by psychic re-education.

A large and most interesting class is composed of those cases in which some endocrine or visceral disturbance is present. We can not here discuss these adequately. In these cases each ductless gland and each organ of the body should be carefully studied, and their disorders, if possible, corrected. The individuals in this group frequently develop neuroses and psychoneuroses of every variety. An endocrine change in development may upset the average bisexuality of an individual and change the personality. All human beings are bisexual, the male's feminine characteristics being shown by rudimentary breasts and certain similarities of the generative organs, and also by the fact that he can acquire certain feminine traits, sewing and cooking, for example, when necessity requires. The female has the rudimentary male organ in the clitoris, and may fight or attend to business if occasion arises. Through changes in the pineal, pituitary, suprarenal and the gonad glands, this differential proportion between the male and the female may lessen or change, and we may have, not only the masculine-woman and the feminine-man, both more susceptible than the normal type to functional disturbance, but we may have a variety of bizzarre and abortive types, two of which might be termed the girlish-boy-man type and the boyish-girl-woman type, which means not only a partial sex reversion but a preservation of infantile sex characteristics in both types. These individuals seem particularly inclined to phobias and complexes. Their adjustment to life consists chiefly in rearranging their environment so that they may fit into it without having to butt against its rough edges or stumble over its obstacles.

Of the last class, the brain defective, much more is known; they are more readily recognized and their mental difficulties may be more accurately measured. Their treatment is supervision, group discipline or institutional control, according to the degree of mental and conduct disturbance exhibited.

In conclusion, I should like to make the simple plea, when patients are brought to us with functional complaints, that we do not brush them aside, but that we delve deeply into the physical and psychic status of each case in order that we may, perchance, be able to so adjust their personalities that their lives may be made more tolerable for themselves and for those with whom they live and come in contact. To attempt this is, all things considered, an ambition worthy of the mettle of any medical man.

212 *West Franklin Street.*

PARALYSIS OF THE THIRD, FOURTH AND SIXTH NERVES FROM SPHENOID-ETHMOID DISEASE.*

By CLIFTON M. MILLER, M. D., F. A. C. S., Richmond, Va.

Reduction of the motility of the eye as a result of disease of the nasal accessory sinuses has received some passing consideration, but nothing like so much as has reduction of vision from the same cause. It is probable that the optic nerve is more frequently affected from this cause; at any rate, the patient is more able to appreciate the lessening of visual acuity even in one eye than he is a muscular imbalance when that imbalance is insufficient to cause diplopia. It seems to the writer highly probable that heterophoria is in many instances associated with nasal accessory sinus disease as a causative factor. As many cases of lowered visual acuity have responded to treatment of the nasal sinuses with complete return to normal vision, why should not the motor nerves be affected to a similar extent?

The course of the optic nerve through the optic foramen subjects it to pressure when for any cause the nerve swells or the lumen of the foramen becomes narrowed, and this is particularly true when the optic foramen is con-

*Read before the Richmond Ophthalmological and Otolaryngological Society, February, 1926.

genitally narrow. However, every case of optic nerve involvement is not due to pressure in the optic foramen in my opinion, but frequently is simply a toxaemia; and to this form of trouble the third, fourth and sixth nerves are subject, though they have not the narrow canal to pass, as a result of which they might likewise suffer pressure palsies. This does not apply to those cases where there is tumor or phlegmon of the orbit producing immobility and other symptoms indicating intraorbital pressure.

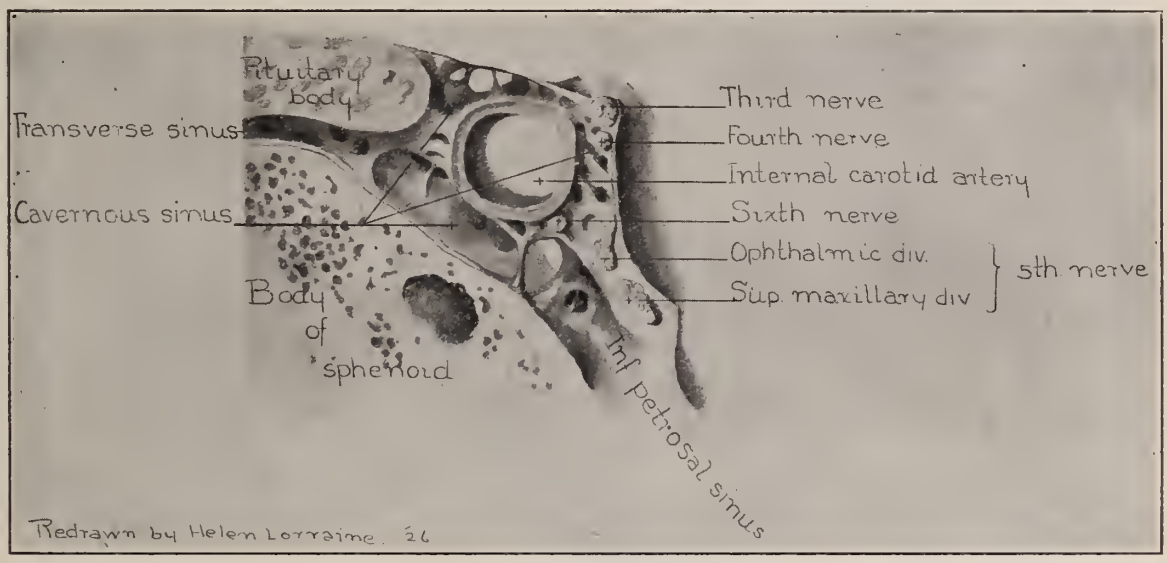


Plate 1.—Plan showing relative position of structures in right cavernous sinus viewed from behind. (Taken from Gray's Anatomy).

The causes of paralysis of the orbital muscles are many and, at present, the intracranial factors do not concern us. So far as my reading has carried me there is no indication that disease of the ethmoid has been given as a cause except in those cases where a phlegmon of the orbit results from the ethmoidal disease. The American Encyclopedia of Ophthalmology (Vol. XI, Page 8,140) says, "A cold contracted from undue exposure to dampness, to a draught, or any other causative agent, may cause, in some inexplicable way, paresis or even paralysis of any one of the ocular muscles." In the light of our present knowledge of foci of infection, the way such paresis or paralysis is caused is probably not quite so inexplicable. Fuchs speaks of rheumatic paralyses, as do most other authors, and we now search for infected foci when a diagnosis of rheumatism is made. The dictum of many syphilographers that paralysis of a single muscle or, single group of muscles is pathognomonic of syphilis should be remembered but not followed absolutely, for it has too many exceptions to be taken literally. But the possibility of syphilis as a causative factor should never be lost sight of. Be not too ready to prescribe antisyphilitic remedies where unable to find other causes in a chronic case, but do not fear to diagnose syphilis where your clinical symptoms justify it, even though all serological examinations are negative.

The symptomatology of complete paralysis of the muscles of the eye will be illustrated by the following case:

Mrs. J. S. E., white, female, age fifty-five, entered Stuart Circle Hospital July 13, 1925. General condition good, temperature 98.8°, pulse 76. Nothing in past history of any significance except had broncho-pneumonia six years ago, followed by septicaemia. Married, eight children, all well.

Present Condition.—In morning of July 5th, right eye began to ache and grew gradually worse. No flashes of light, and no diplopia at that time. Ache was continuous and interfered with sleep unless something to quiet her was taken. Has now great pain on right side of head. Complete ptosis of right lid, with no control of lid by voluntary effort. Physical appearance of right eye good. Eye immobile with pupil directed forward. No sign of motion as left eye moves. Pupil semi-dilated with no contractile response to either light or

accommodation. Exophthalmos very slight. Diplopia when eye-lid is raised with fingers. No fundus changes apparent. Visual acuity good. Fields appear about normal. Examination of nose shows thickened middle turbinate on right side with pus coming from beneath it, as well as on septal aspect. Neurological and serological examinations negative. Urine shows a trace of albumin and many oxalate of calcium crystals. Blood count was 6.000 whites, 68 per cent Polys.; lymphocytes, small 24 per cent, large 8 per cent. On July 17th blood count showed 17,000 whites, 74 per cent Polys., small lymphocytes 24 per cent, mast cells 2 per cent. Examination of pus from nose showed staphylococcus albus.

muscles. Patient reported for local treatment every three or four days. About August 10th some slight downward movement of the eye could be noticed. From this time on there was a gradual improvement in the motility of the eye until about December 1st there was complete restoration of movement in all directions except upward. Movement upward takes place, but is somewhat restricted, and diplopia begins to manifest itself when extreme upward rotation of eyes is attempted. Ptosis is entirely absent and there is no diplopia in any other position of the eyes. She looks perfectly well and says she feels well in every way, being able to do anything she wishes to.

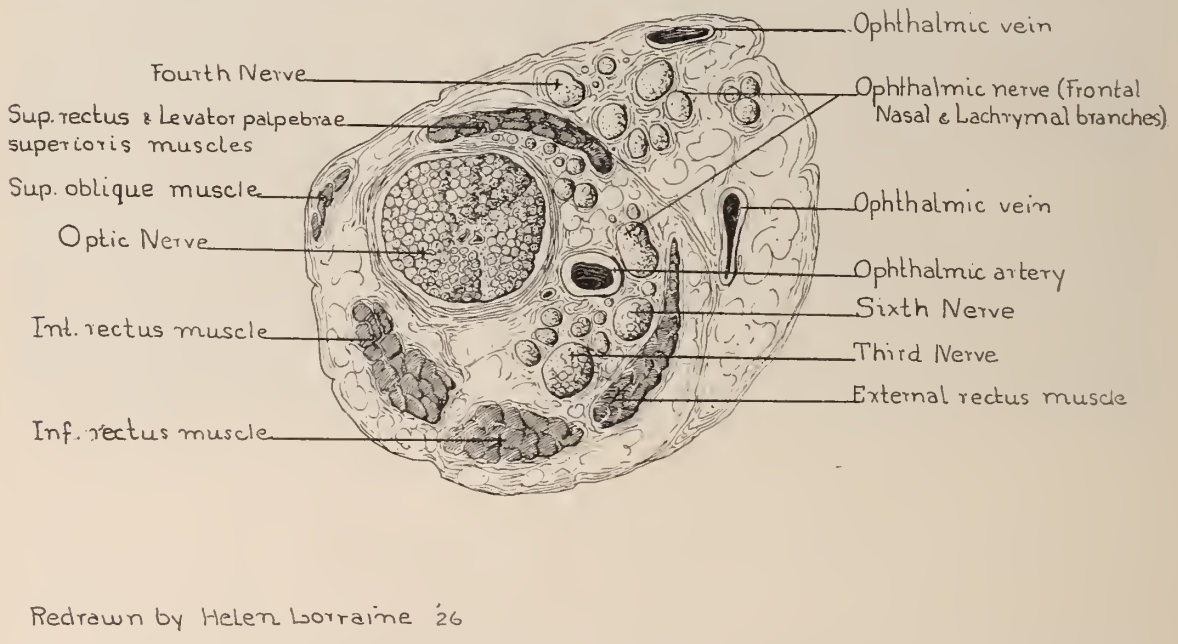


Plate 2.—Section through contents of right orbit 1-2 mm. in front of the optic foramen, viewed from behind.—After Lange. (Taken from Morris' Anatomy).

Treatment by shrinkage and suction for a few days was tried, but getting no improvement and it being necessary to continue use of opiates for pain, operation on ethmoid was advised and accepted. On July 18th, under local anaesthetic, right middle turbinate was removed and sphenoid and ethmoid drained. Much pus was found. The ethmoid was full of soft granulation tissue and pus. Relief from pain took place in twelve hours, and after twenty-four hours patient had to take no more opiate. Was discharged from hospital July 23rd feeling perfectly well as far as pain was concerned, but no change in condition of eye

A diagnosis of toxic paralysis of the third, fourth and sixth nerves was made, as there could be no other arrived at with the symptomatology found. Paralysis of these three nerves as a result of some central lesion of the brain would necessarily have involved other cranial nerves, particularly some involvement of the motility of the other eye.

Cavernous sinus thrombosis is always to be thought of when such paralysis occurs. It seems to be, however, an impossible diagnosis in the case above reported, though the involvement of the ethmoid and sphenoid might easily have caused phlebitis of the opthalmic vein

with a cavernous sinus thrombosis resulting therefrom. However, there was no injection or edema of the conjunctiva at any time, and exophthalmos was present only in the slightest degree. The opposite side never showed any indications of involvement of the cavernous sinus. It seems hardly possible that the cavernous sinus of one side could be thrombosed without the other side becoming involved.

An inflammatory infiltration of the muscles producing complete paralysis would have occurred at the tip of the muscle cone, if such could have occurred. This would have left the inferior oblique unimpaired and the eye would have been moved by it, which was not the case. Had the paralysis been due to some pathology of the muscles, the sixth nerve would have been left unimpaired and the pupil would have responded to the stimuli of light and accommodation. It was entirely immobile. Tumor or phlegmon of the orbit producing sufficient pressure to cause immobility of the eye would have produced marked exophthalmos with later conjunctival injection and edema.

Finally, the diagnosis arrived at seems to have been confirmed by the fact that cure followed and, in my opinion, resulted entirely from drainage of the ethmoid and sphenoid.

Stuart Circle Hospital.

THE BEDSIDE STUDY OF THE CIRCULATION IN ACUTE AND CHRONIC INFECTIONS.*

By GARNETT NELSON, M. D., Richmond, Va.
Department of Medicine, McGuire Clinic, St. Luke's Hospital.

It is a good thing now and then to take stock of our daily work, and see to it that we are making full use of our ordinary routine observations. This business of taking stock of ourselves is necessary in order to be able to avoid carelessness and indifference and at the same time increase our ability to measure and interpret the significance of available data. Following an established plan and custom of occasionally reviewing the value of professional habits, this paper was prepared for my own use, and I am taking the liberty of presenting it because the time and thought required in writing it out did not seem entirely wasted.

In our ordinary daily work we constantly approach the bedside of patients ill with acute or chronic infections. We look at the tongue, take the temperature, feel the pulse, and perhaps take the blood pressure, examine the heart, and really study the circulation. It is possibly true that the most common observation we make is to feel the pulse, and it is equally true that we have to consciously guard against doing this in a haphazard and uninforming fashion.

In all acute or chronic infections a rather complete study of the circulation is essential. No diagnosis is finished without a prognosis, and in many infections the final outcome depends on the patient's endurance, and this in turn on the circulation. This dependence on what the circulation can endure not only affects the immediate result, determining whether or not the patient will survive, but in those cases that recover, the completeness of their recovery, that is their functionating capacity, depends very directly on the amount to which the circulation is crippled during the activity of an infection, or of equal importance during convalescence.

It is only practicable to consider in detail some of the infections, and particularly those that have a definite effect on the heart muscle or the circulatory apparatus as a whole.

The questions that interest us in the beginning, therefore, relate to the effects various infections may have on the circulation, and our ability to recognize these effects at the bedside. In general, these effects may be classified as follows:

1. Actual secondary infection of the muscle, valves or membranes.
2. Hyaline degenerative changes in the muscle.
3. Degenerative arterial processes.
4. Heart strain and exhaustion from prolonged rapid action.
5. The more or less material changes in other organs due directly to a failing circulation.

In regard to actual secondary infection of the muscle, valves or membranes, certain controlling factors contribute especially to the frequency of these infections. These are particularly age, and the specificity of certain organisms. In regard to age, the liability of the heart muscle, valves or membranes to secondary infections depends to no small extent on the age of the patient, particularly in the infectious diseases of infancy and child-

*Read before the Richmond Academy of Medicine, at Richmond, Va., December 8, 1925.

hood. And there is something more to this than the mere fact that these infections are more prevalent during infancy and childhood than at later periods of our lives. It is apparent that the resisting power of the cardiac structure to direct infection is not as well developed during the early periods of our lives as it is later. For example, chorea, tonsillar infection and rheumatic arthritis are complicated or followed by endocarditis, myocarditis, or pericarditis in inverse proportion, in their frequency, to the age of the patient. The very young show such complications or sequelae very frequently,—the aged very rarely. This fact is overlooked too often, and relatively trifling and easily curable involvements of the circulation are allowed to leave some permanent defect. In all infectious processes, particularly in the young, the circulation should be watched until a guarded convalescence permits a clean bill of health.

Next to age as a predisposing factor, the nature of the infection itself enjoys a position of commanding importance. Although gonococci, diphtheria bacilli, tubercle bacilli and many other organisms may occasionally become lodged and set up true areas of infection, they are not liable to do so, and even when positive complicating infections do occur during the course of an acute gonorrhea, diphtheria, etc., the micro-organism found in these secondary localized areas is some form of streptococcus or staphylococcus.

Of course, the most frequent infectious process to be complicated by cardiac infection is rheumatic arthritis, being responsible for approximately 40 per cent of all true infections of the circulatory apparatus, and we must bear in mind that the frequency of these secondary infections does not depend on the severity of the joint infection, mild cases being as much to be feared as the most severe.

In addition to the infections mentioned, any of the specific fevers have to be watched. Osler reports five instances in 100 post-mortems for pneumonia, and twelve instances in 216 post-mortems on phthisical subjects.

The most common pathology to be found is hyaline degenerative changes in the heart muscle. This is, of course, not due to actual infection but to degenerative processes depending on prolonged fevers or biological toxemias. These hyaline degenerative processes occur frequently during the pneumonias, typhoid fever, osteomyelitis, tuberculosis or any suppurative process. They are far less graphic than the direct infection, recognized with more difficulty, and, therefore, even more frequently overlooked.

The arterial degenerative processes consist of nothing more nor less than the athero or sclerotic changes which are to be expected as a result of prolonged chemical or biological toxemias. Under the general subject of this paper, we would, therefore, expect these arterial changes chiefly in chronic malaria and syphilis, particularly the latter.

The fourth pathological condition mentioned in our classification was "heart strain and exhaustion from prolonged rapid action." In the strictest sense this is hardly a true pathology, inasmuch as there is neither a direct infection nor a hyaline nor fatty degeneration, but the muscle fibres become stretched, causing dilatations, or lose tone, impairing one or more of their special functions, such as conductivity, tonicity, contractility, etc.

Although true pathological changes may not be present, it is not to be inferred that permanent injury is only infrequently the direct result of such strain or exhaustion. On the contrary, we frequently see patients suffering from the so-called weak heart, which bears a definite association with some of the acute infections. In addition to those infectious processes which have been mentioned earlier in this paper, possibly the most frequent cause of this particular type of heart trouble is the "flu." It has been a common observation that cases of rapid heart action, dyspnoea on slight exertion, and a sensation of being too easily fatigued, or a definite precordial oppression were encountered following our recent epidemics of the "flu," especially in those cases in which a too rapid convalescence was attempted.

The fifth effect to be considered is the more or less material change in other organs due directly to a failing circulation. The most conspicuous of these are cerebral anemia, pulmonary congestions, congestions of the liver, kidneys, and of the gastro-intestinal tract, with nausea and vomiting or obstinate diarrhea. It is an interesting phenomenon, for example, to see obstinate diarrhea in patients convalescing from typhoid, promptly relieved by improving the mechanism of the circulation.

So much then, very briefly, for the general

effects of the infectious diseases on the circulatory apparatus.

The ability to recognize these effects is so common to all of us, that our success is more a matter of painstaking observation than of knowledge. Still, in the hurried work of a busy professional life, we do fail to make these observations with regrettable frequency, and it is not to our credit to so often see reports of cases of sudden death in adults or children following an acute infectious disease. We hear too often that so-and-so had pneumonia, for example, and was about well, when on making some trifling exertion he collapsed and died in a few minutes. The truth of the matter generally in such cases is that the patient was by no means about well, but was still suffering from a simple endocarditis, hyaline degeneration, or heart strain, from which he might have recovered.

So, then, as was said above, we should form and stick to certain professional habits, and when we are at the bedside of a patient suffering with an acute infection, we should ask ourselves several direct questions. These several questions relate particularly to the heart sounds, the size of the heart, the rate, rhythm and volume of the pulse, and the blood pressure.

In regard to the heart sounds, time does not permit a full discussion of the significance of murmurs. Suffice it to say that any abnormal new sound, or any modification of the length, quality, or intensity of normal sounds, calls for careful and prolonged observation. We have to determine from our own experience what sounds mean to us. We have to have opinions of our own.

Feeling that this is axiomatic, that we must have our own opinions, I hope that I will be pardoned for opposing a teaching in regard to the significance of the systolic apical murmur that has appeared in text-books and journals during the past few years. In Cabot's "Physical Diagnosis," under the heading—"The Question of Mitral Regurgitation in Early Rheumatic Mitral Disease."—we find as follows: "Such murmurs are no evidence of disease." * * *. "Early coxcomb vegetations may hold the valves apart so that they cannot close. Relaxation of the papillary muscles or shortening of tendinous cords may well permit a reflux. Muscular weakness may weaken the sphincteric action of the circular fibers about the base of the leaflets so that they do not fill up the mitral orifice."

In my opinion for what it is worth, this teaching may lead to serious error. It may be all right to say that such murmurs do not define the exact nature of a valvular or muscular lesion, but if we are watching at the bedside of an acute infection, and are willing to pass up systolic apical murmurs as having no significance, we will undoubtedly be responsible for permanent cardiac damage or even death that might be prevented. This is especially true, to repeat myself, of children during or ofter a chorea, tonsillitis, or rheumatic arthritis.

Indeed, I think that Cabot expresses himself somewhat better when, in his section on "Late Mitral Disease—Stenosis," he states that "In the early stage at which the stenosis can be recognized with certainty, there are no abnormal signs when the patient is at rest except a systolic murmur."

The rate, rhythm and volume of the pulse are not only significant in measuring the seriousness of an illness, but may be used as a guide in helping us to determine the nature of the invading organism. This seems to me to be especially true of three organisms, the pneumococcus, the meningococcus, and the tubercle bacillus. In the presence of a pneumonia, a slow, full, bounding pulse indicates a pneumococcus, whereas, a soft, rapid, watery pulse indicates one of the numerous organisms that cause broncho-pneumonia. Infection with a meningococcus meets with a response very similar to that of a pneumococcus, that is a slow, bounding pulse of wide volume. In the presence of a tubercular infection, a rapid, watery pulse of poor volume is an ominous sign.

In the presence of or following any infection, a rapid, watery pulse, or a pulse that responds too greatly to exercise and fails to slow down promptly, points very definitely to involvement of the heart muscle.

Observations of the size of the heart are, of course, imperative. A sufficiently accurate observation may be made by noting by palpation the position of the apex impulse. The only precaution that is necessary is to remember that the heart changes its position markedly with change of posture, and to see to it that our daily records of the position of the apex impulse are made under the same

conditions of posture and respiration. If, in the course of or following an acute infection, the apex impulse moves downwards and outwards appreciably, weeks or even months of rest in bed are indicated in the hope that the apex impulse will return to its normal site.

Just here I wish to mention a very practical use of the sphygmomanometer,—I mean as an aid in recognizing arrhythmias. Bedside studies of arrhythmias are made in three ways, first, by feeling the pulse; second, by a combined feeling of the pulse and use of the stethoscope over the heart's apex; third, by the use of sphygmomanometer. The simplest method is by feeling the pulse, and the more common arrhythmias are easily recognized. The combined feeling of the pulse and use of the stethoscope enables us to recognize the little extra beats that have not enough force to throw an impulse through to the wrist, that is a pulse deficit. With the sphymomanometer, we are able to recognize those arrhythmias that are irregular in force only. Each cardiac impulse may give a pulse at the wrist and they may all come through at properly spaced intervals, but their force is varying and, perhaps, varying so slightly that neither the finger nor the stethoscope can appreciate it. If, now, we attempt to take the systolic pressure and pump in sufficient air to shut out all sounds below the cuff, then let air escape until the first audible sound gets by, then hold your pressure at this point for one or two minutes, it may be easily observed that either some ventricular contractions fail to force by any sound, or else the sounds are varying decidedly in intensity. By this means, we can easily see that we have a definite arrhythmia as far as the force of each ventricular contraction is concerned. I believe that the development of these arrhythmias is of even more significance than excessive rapidity of action. If, for example, in the pneumonia of the aged, while observing the systolic pressure, I detect an early arrhythmia in force, I feel warranted in giving a prognosis of a fatal termination.

In order to bring this cursory discussion of this vitally important subject to a conclusion, I wish to speak briefly of the prognosis and the methods at our disposal for combating these disorders of the circulation.

Of course, our sheet anchor is prolonged rest, mentally and physically, for the purpose of saving the heart every possible contraction. In the direct infections, except in the very young, our efforts at preventing some permanent crippling are doomed to meet with but poor success at best. Many cases of simple endocarditis, especially those complicating rheumatic arthritis, will make a more or less complete recovery. In the very young they will frequently get entirely well.

All cases of malignant endocarditis die. This is so absolutely true that if we have made a diagnosis of malignant endocarditis and the patient recovers, we must change our diagnosis.

Many cases of hyaline degeneration properly handled make complete recoveries.

All cases of heart strain or exhaustion should get entirely well, the heart muscle possessing, as we know, a recuperative power beyond that of any other portion of the body.

The effects of failing circulation on the other portions of the body, such as the brain, lungs, liver, kidneys, etc., can be relieved in direct proportion to our ability to restore the tone of the circulation. These secondary effects, however, of themselves further embarrass the circulation and special means must be adopted to relieve the processes going on in these more distant organs.

The best illustration of what I mean is pulmonary edema. Here, although the edema is directly due to cardiac failure, it of itself increases the cardiac embarrassment. I report one case briefly. Mrs. B., white, female, age sixty-seven, was ill of lobar pneumonia and on the eleventh day collapsed, in spite of the usual efforts at support. When I reached her bedside, a few minutes later she was cyanosed, pulseless, unconscious, cold, clammy, her pupils dilated and death seemed imminent. A rapid examination showed pulmonary edema involving not only the pneumonic lung, but the other as well. Using a pocket knife, a vein was opened and about sixteen ounces of blood taken. The response was prompt and recovery complete.

In addition to rest in bed, we should, of course, employ in the infections, any specific treatment at our disposal. I refer here, of course, to antitoxin in diphtheria, quinine in malaria, mercury or salvarsan as indicated, and dependable vaccines.

Aside from rest and specific medication, our

most helpful drugs are, in the order named, digitalis, caffein, atropin, spartein, strychnin.

The only comment I wish to make in reference to digitalis is to emphasize what I believe to have been definitely proven in the last few years. Our results from digitalis have been unsatisfactory for two reasons: First, the use of unreliable preparations, and, second, insufficient dosage, no matter what preparation used. In the past two years, we have learned that instead of attempting to get results with the equivalent of one grain of the powdered leaves, we should not use less than the equivalent of from four to six or eight grains, the proper initial dose of a reliable tincture being, therefore, not fifteen drops, but from one to two drams.

Caffeine will not by any means replace digitalis, but is, possibly, especially indicated, as suggested by Forchheimer, in those cases of lost circulatory tone where abdominal tympanites is a troublesome symptom. In my own practice, I only use caffeine for routine treatment in those patients, especially the aged, who are accustomed to and are more or less dependent on coffee. This is not a point of minor importance. Old people, accustomed to several cups of coffee daily, when ill, need caffein just as distinctly as those who are accustomed to whiskey, when ill, will die if deprived of their whiskey.

The indications for the use of atropin are fairly definite. It should be used in that group of cases where the circulatory disturbances, such as fluctuating blood presure, alternate flushing and pallor, or other symptoms, indicate vagotonia. The result in this group of cases from the use of atropin in large enough doses, such as 1/50 of a grain hypodermically every four hours, are quite as graphic as a speedy response to properly used digitalis.

Spartein is reputed to have a special action on the right side of the heart and to act as an excellent diuretic. Personally, I have never been sure I saw it do anything.

Strychnin has no place in the management of circulatory disturbances except to the extent that it acts as a general muscular tonic.

In all cases where rapid heart action is a conspicuous feature, the ice-bag over the precordium is indicated.

LOCAL ANESTHESIA.*

By WILLIAM B. MARBURY, M. D., Washington, D. C.

Local anesthesia may be said to date from 1884 when Koller announced that a few drops of a 2 per cent solution of cocain placed on the conjunctival sac made the eye insensitive to pain. This, with the discovery and use of adrenalin chloride as an adjunct, forms the background of the present day use of local anesthesia. It is interesting to note that ether anesthesia preceded the use of local by forty-two years.

The term is usually understood to mean the absence of pain over a smaller or larger area, and is used in contra-distinction to general anesthesia or narcosis. When used in the broad sense, it would include spinal, regional, and induction anesthesias, though it is more frequently applied to the latter. The dividing line between local and regional anesthesia is an indefinite one, as local anesthesia is regional over a small area, and regional anesthesia is local over a large area. Local anesthesia is accomplished by ethyl chloride spraying, osmosis or by infiltration. The ethyl chloride spray causes anesthesia by freezing the area. The freezing itself is quite painful and the frozen area is made hard and difficult to incise. The principle of osmosis is taken advantage of in anesthetizing the mucous membranes and the conjunctiva. The agent most frequently used is cocain in from 1 to 10 per cent solution. It should be used with adrenalin to diminish absorption, and with great care because of possible idiosyncrasy of the patient to the drug.

Infiltration anesthesia is the one most commonly used and has the widest application. It consists of injecting the anesthetizing solution into the tissues direct and bringing it into relation with the nerve terminals, rendering them functionless. An area may be anesthetized by blocking the nerve that supplies it. This may be accomplished by injecting the nerve itself (endoneural) or by infiltrating around it (paraneural).

A number of drugs have been used for local anesthesia, such as cocain, stovain, quinin and urea, novocain and numerous others, but practically all have been placed in the discard in favor of the last named. This is for several reasons, namely, novocain gives the greatest

*Read before the Medical Society of the District of Columbia, at Washington, D. C., December 9, 1925.

amount of anesthesia for the least toxicity; it can be sterilized by boiling; it can be put up in tablets with the required amount of adrenalin and easily made up with isotonic salt solution into the desired strength. Adrenalin used in this way is staple, whereas in solution it deteriorates. Tablets marked "A," containing 0.125 grams of novocain and 0.000125 grams of suprarenin, are conveniently supplied in vials by the Metz Laboratories. One tablet dissolved in 25 c.c. of normal salt solution makes a strength of one-half of one per cent. Isotonic salt solution should be used as the vehicle. It is less irritating to the tissues and less painful. The tablets should be sterilized by boiling just before using, and normal salt solution added as required. The only cumbersome part of the technic is the preparation of the salt solution. This should be carefully made in advance and autoclaved for at least thirty minutes at twenty-five pounds pressure.

The patient should be prepared as he would be for a general anesthesia except that coffee and toast may be allowed for the morning meal. As to whether or not morphine should be given will depend upon the operator's individual experience. Morphine increases the chance of nausea following the operation, but lessens greatly the anticipation on the part of the patient, and in nervous individuals is of decided benefit. Crile states, "under the influence of morphine and scopolamin no one is a coward, no one is brave; every one is in a neutral state." It is important to take the patient into one's confidence, forewarning him of a twinge where it can be foretold. It is well to have a psychoanesthetist constantly with the patient, who will give encouragement and reassurance. Iced cloths on the forehead are a solace. Sometimes a cigarette is a boon.

The choice of an anesthetic may be of considerable importance and have a far-reaching effect. The patient may have a decided preference as to whether or not he wants to be present at his own operation. Sometimes prejudice may be overcome by a persuasive surgeon. Local anesthesia has its greatest usefulness in minor surgery, but there are few fields that have not been explored by the "local" enthusiast with his "piqure." It may be the anesthetic of necessity in the aged or those weak and debilitated from disease. There is practically no mortality *per se*. It has been said that there is more chance of infection under local than general anesthesia. The operative field is practically bloodless and voluntary action on the part of the patient may give material aid.

The armamentarium for local anesthesia is simple. One should have at least two 10 c.c. record syringes with needles of small calibre and different lengths. An alcohol lamp is convenient for sterilizing the novocain tablets. They should be boiled with a small amount of normal salt solution and this diluted to the required strength. The salt solution should be isotonic and sterilized in advance in an autoclave.

Considerable minor surgery can be done in one's office by using local anesthesia, which would be impossible without it. Wens or other small tumors may be removed from nearly any part of the body. Abscesses or infections may be opened and drained if the precaution is taken not to inject the anesthetizing fluid primarily into the inflamed area. Thrombosed external hemorrhoids may be incised and the clots turned out. These are only some of its applications. When anesthetizing a lacerated wound, preparatory to suture, it is important not to inject through the skin but into the incised area. This is both less painful and easier to accomplish.

Because general anesthesia is so safe and satisfactory when administered by those competent to give it, local anesthesia has been considered by many to be indicated only in minor work. This is hardly true, as the works of Braun, Sherwood-Dunn, Allen, Labat, Finsterer and many others testify. While it remains the *sine qua non* for minor surgery, it is able to take up the burden of larger fields when necessity beckons. In the following paragraphs, I will attempt to show briefly the scope of local anesthesia in major surgery.

On the head, most traumatic surgery can be accomplished under local. Cushing has said that any patient whose head can be shaven without a general anesthesia can be operated on under local. Of course, if the patient is irrational and uncontrollable, narcosis is necessary. Some of these patients are comatose and require very little anesthesia except to prevent further shock. It is well to remember that the nerve supply of the scalp comes from below and is supplied by the three branches of the trigeminus and the cervical plexus. The

skin and periosteum are the only sensitive parts, the bones and dura being insensitive. Osteoperiosteal graphs may be switched to replace bony defects. I have done them on two children, ages nine and fourteen, respectively. Brain tumors have been successfully removed under local anesthesia.

In the neck, operations about the mid-line are satisfactorily done, such as tracheotomy, laryngotomy, thyro-glossal cysts. In thyroidectomy, there is almost inevitably some pain when the lobe is displaced forward; therefore, the anoci-association of Crile, i. e. combination of gas-oxygen and local had best be used.

The chest is a fertile field for local anesthesia. Surgery here is often necessary where there is already embarrassed respiratory function and a general anesthesia is contra-indicated. Pleurotomy may be done by the open or closed method, rib resection, or the more deforming operation of Schede. For an intercostal opening or the resection of a part of one rib, local infiltration is sufficient, but if more than one rib is to be resected, the intercostal nerves should be infiltrated. These nerves are found at the lower border of the ribs at the costal angles.

With the exception of herniotomy, which local anesthesia may almost be said to claim as its own, most operations which entail opening the abdominal cavity are done under general anesthesia. This is for several reasons. The parietal peritoneum is very sensitive and hard to anesthetize; there is danger of the patient straining and extruding coils of intestine; traction, incident to widening the incision, is difficult and any tug on the mesentary is resented by the patient. In spite of all these difficulties, when necessary, an appendix can be removed under local anesthesia, or a gall-bladder drained. Not infrequently a coil of intestine is brought to the surface and a catheter placed in the lumen to relieve obstruction. Farr goes so far as to state that for the last ten years he has used local anesthesia in over 90 per cent of his gall-bladder cases, regardless of the type, and in over 97 per cent of his appendix cases, regardless of the stage of the disease or the age of the patient. He uses the infiltration block for the parietes and anterior splanchnic or sympathetic anesthesia when once in the abdomen.

Operations about the rectum and perineum may be done by infiltration or caudal block, and the latter plus para-sacral anesthesia will permit of a painless cystotomy or prostatectomy.

The upper extremity may be anesthetized by infiltrating around the brachial plexus in the neck, or by exposing the main nerve trunks below the insertion of the pectoralis major muscle and injecting endoneurally. In the lower extremity, the great and lesser sciatic in the back of the leg, and the external cutaneous, the anterior cural, and external obturator nerves in the front, should be carefully mapped out and infiltrated. I have amputated above the knee for gangrene in a diabetic after so doing.

No effort has been made in this brief discussion to compare the relative merits of regional and simple infiltration anesthesia. Indeed, there should be no quarrel between the advocates of either, but the one made to supplement the other. Labat has done much to bring the former into the limelight.

In closing, let me emphasize the importance to the surgeon of qualifying as fully in this method of administering anesthesia as the professional anesthetist has done in the administration of general anesthesia. Not until then will it be used to the fullest advantage.

1015 *Sixteenth Street, N. W.*

THE TREATMENT OF ECLAMPSIA.*

By M. PIERCE RUCKER, M. D., Richmond, Va.

The treatment of eclampsia produces a lively discussion among medical men for many reasons. In the first place, the disease itself is so dramatic, with a high immediate mortality both for the mother and child and not infrequently lasting sequlelae in the mothers who survive the convulsive seizures. In the second place, there is no specific or satisfactory treatment, which leaves room for a multitude of treatments, all of which have been of some service in various circumstances. In the third place, the disease itself varies greatly in its severity, which adds confusion in the evaluation of any method of treatment. Until we have a more definite idea as to the cause of eclampsia, we can not hope to be logical in our therapeusis. The best we can do is to treat our patients empirically, choosing those remedies that give the best results. Even this is not so simple as it sounds. The

*Read before the Warwick County Medical Society, January 25, 1926.

facts, uncolored by over-enthusiasm for some particular drug or scheme of treatment, are hard to get, and it is becoming increasingly difficult to get enough clinical material to form a judicial opinion. Dr. Ross McPherson illustrates this well. In 1909 he wrote strongly advocating cesarean section as the treatment of eclampsia. He reported a maternal mortality of 25 per cent and was proud of his results. When reports of the Stroganoff and the Dublin methods began to appear in the literature, it was determined at the New York Lying-in Hospital to try the conservative plan. All the eclamptics entering the service were put in Dr. McPherson's charge and he was to report when he had treated 200 cases in this manner. In the meantime there was a great increase in the activity of the prenatal clinic, and Dr. McPerson has never completed his series. To date* he has had only 190 cases. He has, however, become a convert to conservatism in the treatment of eclampsia.

The treatment of eclampsia naturally divides itself into prophylactic treatment, treatment of the patient with eclampsia, and the subsequent treatment. The prime essential of prophylactic treatment is prenatal care. In the light of our present knowledge this need not antedate conception although, when McQuarrie's work on the possible agglutinating effect of fetal serum upon the mother's blood appeared, it looked as if the supervision of marriage might become the province of obstetricians. In fact, Gruhzit read a paper before the American Association of Obstetricians, Gynecologists and Abdominal Surgeons entitled "Is Eclampsia A Biological Necessity?" His argument was that if the parents belonged to the same blood group, the offspring would of necessity inherit the same blood characteristics and there would be no danger of eclampsia. Unfortunately for the eugenically inclined, McQuarrie's results have not been confirmed. For instance, a recent study from Stoeckel's clinic at Leipzig upon 302 pregnant women and 250 newborn infants shows a difference of blood group in 26.4 per cent. There were twenty-two cases of toxemia in this series with a difference of blood grouping between the mother and child of 32 per cent. In twelve cases of eclampsia the blood group of the child was the same as that of the mother eight times.

So, for the present, let us begin our supervision of the prospective mother early in pregnancy. The technic of prenatal care is now so well known that I need not go into that. Our preventive eclamptic treatment should begin whenever the blood pressure begins to rise. If we wait for confirmatory evidence of toxemia in the shape of albuminuria and changes in the eye grounds, you wait until permanent damage has been done, and if you wait until such symptoms as headache, dizziness, and gastric disturbances appear you often wait too long to prevent eclampsia. The patient, with a rising blood pressure should be put to bed, her diet should be restricted to carbohydrates, the alimentary tract cleaned out and fluids should be forced. If the blood pressure falls, the patient should be carefully watched for a recurrence, when the same treatment is to be instituted. If the blood pressure does not fall under such treatment, then interruption of pregnancy should be seriously considered. One of the most unexpected findings in a follow-up study of the toxemias of pregnancies at Johns Hopkins was that toxic cases in which eclampsia was prevented showed a much higher incidence of kidney impairment than the eclamptics. Harris explained this incongruity on the basis of the time element. The toxic cases that did not have convulsions were carried along in the interests of the child and toxic agents acted for longer periods of time, often for weeks, whereas, the eclamptics were subjected to the effects of the toxemia for much shorter periods of time. The question naturally arises, are we justified in subjecting our patients to this very real risk of having a chronic nephritis for the sake of having a full term child whose chances of surviving even then are definitely impaired. It is a question I believe that should be put plainly up to the mother. Unless she is willing to assume this risk, I believe pregnancy should be terminated. If she elects to go on with the pregnancy, her wishes should be obtained in writing, otherwise, a consultation should be had, for the protection of the doctor.

The treatment of the case with actual eclampsia unfortunately cannot be disposed of so easily. The first requisite is the willingness and the ability of the medical attendant

*Dr. McPherson discussed this question at a clinic before the Obstetrical Section of the Southern Medical Association, in November, 1925.

to be with the patient all the time. The general principles of treatment can be outlined, but the details must be varied to fit the individual patient, and such requires constant supervision. The best obstetric opinion is rapidly going over to the conservative method of treatment. The report of the London Committee on eclampsia of the Third British Congress of Obstetrics and Gynecology gives a good idea of the relative value of the various modes of delivery. In the first place, this committee attempted to classify eclampsia clinically. They regard the following seven phenomena as signs of danger: coma, a pulse rate over 200, a temperature above 103, a number of fits greater than 10, a urine that becomes solid on boiling, the absence of edema, and a blood pressure above 200 m.m. When a patient has any two of the above phenomena, the case is classed as a severe one. The committee gives the following table of the results obtained in the various London Hospitals:

Mode of delivery	Mean mortality	Mortality mild cases	Mortality severe cases
1. Natural delivery	12.3%	6%	20.5%
2. Induction of labor and spontaneous delivery	9.6%	5.1%	20.8%
3. Assisted delivery	14.5%	5%	33.3%
4. Cesarean section	23.8%	9.8%	37 %
5. Accouchement force	50 %	25 %	60 %

If pregnancy, as undoubtedly it is, be the prime requisite for eclampsia, it would seem logical to end the pregnancy as quickly as possible. These patients, however, are bad surgical risks, and the less they are disturbed the better the results. Stroganoff, whose wonderful results have attracted world wide attention, and also considerable skepticism, insists that the patient be treated in a darkened room free from all noise. He even anesthetizes his patients whenever a hypodermic is given. All of us, I am sure, have seen a loud noise or the jarring of the bed precipitate a convulsion and with each convulsion the case gets more desperate. During the clonic part of the spasm something should be done to prevent the patient from chewing her tongue. Various things are used, the best of which is a procedure recommended by the late Dr. John Winn; a towel or napkin is rolled up and placed between the teeth, just as you put a bit in a horse's mouth. Care should be taken not to push the lips between the teeth with the cloth bit. This carries the tongue back out of the way and places something soft between the jaw teeth. When I see clothes pins, sticks or spoon handles placed between the teeth, I always have a fear of a tooth being broken off or dislodged and of its getting down the patient's throat. The patient should be kept on one side with her head low to minimize the danger of an aspiratory pneumonia. Should the patient not begin to breathe after a convulsion she should be pulled over on her face crossways the bed and artificial respiration be given by pushing down on the short ribs at the rate of eight or ten times a minute. Autopsies have been reported where the cause of death has been a solid portion of vomited food lodged in the glottis.

Among the drugs that are relied upon to control convulsions, morphin has long held first place. It enters largely into the Stroganoff, the Rotunda and the McPherson treatments. The initial dose is usually a half grain and it is repeated in one-fourth grain doses until the respiratory rate shows some effect from it. Some authors recommend that it be given until the rate gets down to eight per minute. Most authorities are content, however, to get the respiratory rate down to twelve or fourteen per minute. At the last meeting of the Eastern and Mid-Western Anesthetists, I heard Dr. Greudel talk on the dosage of morphin as an adjunct of anesthesia. He said it was foolish to have a fixed dosage for morphin. The curve of the reflex irritability varies directly with the metabolic rate of the patient and anything, as, for instance, fever, that caused an increase in metabolic rate called for a larger dose of morphin. This may be the explanation of the tremendous doses that can be safely given to eclamptics. I, myself, have given over five grains in less than eighteen hours. Chloroform used to be a popular drug to control the convulsions and it is still used by Stroganoff. In this country, however, there is a strong feeling against its use from the fact that it induces the same kind of changes in the liver that eclampsia does. One feels, therefore, that its use is adding fuel to the flame by increasing the amount of damage to the liver that is already too greatly degenerated. Chloral hydrate is a very popular sedative and figures largely in the scheme of most of the conservative modes of treatment. It has the advantage of being readily absorbed from the bowels. Theoretically, it is open to the same objection

as chloroform, but to a lesser degree. Sodium bromide is often used along with chloral hydrate. It, too, can be given by bowel. In the past few years paraldehyde has been used intravenously at the Sloane clinic. I have no experience with its use in such a manner as I have feared that an anuria might result. I have, however, used it per rectum, alternating with chloral and sodium bromide, especially after the convulsions were under control.

Quite recently magnesium sulphate has come to the front as a sedative in the treatment of eclampsia. Dorset has used it in large doses (15 c.c. of a 25 per cent solution) intramuscularly with excellent results in some forty-eight cases. Alton and Lincoln have injected it intraspinally in doses of 1 c.c. of a 25 per cent solution for each twenty-five pounds of weight, with instant control of the convulsions. They report four personal cases and five cases from the literature. Lazard gives it intravenously in doses of 20 c.c. of a 10 per cent solution. In some cases he repeats the injection in 15 c.c. doses. His preliminary report is based on seventeen cases and three cases in which the magnesium sulphate was used in smaller doses. He recommends that a solution of calcium chloride be ready for intravenous use as an antidote, should there be any untoward effect. It is needless to say that the magnesium sulphate should be chemically pure and the solution sterile. I have no experience with the spinal injection nor the intramuscular injection, although the latter appeals to me strongly. I have, however, used the intravenous method in seventeen cases. In all of these the magnesium sulphate was the only drug used after it was begun, although some of them had been given morphin and other sedatives before the magnesium sulphate was resorted to. The convulsions were stopped in every case, but in two instances a second dose of 15 c.c. had to be given. There was one maternal death in the series, that of a colored woman who was admitted to the hospital having post-partum convulsions, and with no history as to how she had been delivered. She died of sepsis on the eighth day. The remarkable thing about this treatment is the rapidity with which the mind clears up. The internes often bet among themselves on the number of minutes after an injection before the patient will wake up and ask for a drink of water. In one instance, the patient was conscious when the injection was given and she said she felt as if she were on fire all over. This feeling passed off in a few minutes. So far I have had no untoward effects, and yet I can not feel that the treatment is without danger. In spite of the feeling that I have, that the treatment is not devoid of danger, I believe it is the best remedy we have for the control of two of the danger signs, i. e., the number of convulsions and coma. I imagine there will still be times when I shall have to fall back on various drugs and such procedures as lumbar puncture and venesection in certain cases. I recall a case of post-partum eclampsia I had a number of years ago that lasted five days. Every remedy (morphin, veratrum viride, venesection and lumbar puncture) failed after a short time, and I finally was able to control the situation by keeping the blood pressure below 130 with tablets of nitroglycerine placed on the tongue.

Among the remedies to reduce the blood pressure, blood letting stands first. McPherson recommends it when the pressure is above 180 regardless of whether the case is an ante-, intra-, or post-partum one. Tweedy, on the other hand, advises against bleeding the patient before delivery, for fear of losing too much blood at delivery. At times, especially in those patients whose lungs are so filled up with edema that the brownish froth is coming out of the mouth and nostrils, the removal of 1000 c.c. of blood has seemed nothing short of life saving.

Veratrum viride has long enjoyed popularity, particularly in the South, in the treatment of convulsions. Of late, there has been a good deal written on its use in the British journals. Its action is to lower blood pressure and slow the pulse. I have had very little experience with this drug as I was brought up in a school that taught that it was too dangerous to use.

Another disputed point is the advisability of sweating. Some authorities argue that sweating relieves the kidneys of some of their burden, while others argue that it only concentrates the toxins. The eye consultants are rather prone to advise hot packs and pilocarpin where there are retinal hemorrhages and I have seen cases in which the vision markedly improved after such a treatment.

The importance of promoting the action of the kidneys is admitted by all. Water is the

best diuretic. These patients are usually unconscious and giving anything by mouth is out of the question. Water can be administered by bowels, or under the skin in the form of a 5 per cent glucose solution, or by means of a stomach tube, as recommended by Davidson. Titus gives hypertonic glucose solutions intravenously, not so much with the idea of giving fluids as for the effect of the glucose on liver regeneration, while Thalhimer thinks you detoxicate the patient more quickly if at the same time you give insulin. Matas uses a continuous intravenous injection of a 10 per cent glucose solution in cases of surgical shock, and such a procedure might be tried with advantage in eclampsia and combine the advantages of hydrotherapy with carbohydrate therapy, and, wherever the influence of the Milwaukee teaching is great, a little insulin might be given in the other arm.

There is another grave phenomenon not mentioned in the British report, and that is edema of the lungs. Whenever possible, I like to give a massive dose of digitalis as early as possible. When the patient is conscious I give it by mouth; otherwise, I give it the first time the stomach tube is introduced. I have never seen edema of the lungs occur when this is done. The effect of venesection on pulmonary edema has already been mentioned. In one of the past-partum eclampsia cases with edema of the lungs and marked cyanosis, I injected oxygen into the peritoneal cavity until there was tympany over the fundus, with happy effect. This patient was in extremis with a temperature of 105, but within a few hours the cyanosis and edema disappeared and she made an uneventful recovery.

Finally, comes the question of stomach washing, colonic irrigations and purgatives. Formerly it was my routine, immediately after the initial dose of morphin, to wash out the stomach and leave castor oil or Epsom salts and a dose of digitalis in the stomach, and then wash out the bowel with large quantities of water. I now question whether what good the stomach and colon washings do is not more than offset by the disturbance you cause the patient. The same can be said of purgation, and I have a feeling that such procedures should be postponed until the convulsions are well under control.

To summarize the treatment of eclampsia, once the convulsions have started, one's aim should be to prevent the death of the mother. This may come from the obstruction of the glottis, with immediate suffocation, edema of the lungs from heart failure in a few hours, continued convulsions and cerebral hemorrhage, or, if the patient survives these, a pneumonia that takes her off a week or ten days later. To accomplish our purpose requires constant vigilance. One should be ready to give artificial respiration should occasion demand it. The patient should be kept off her back. All noise, unnecessary light and unnecessary handling should be avoided. The convulsions should be stopped and the coma relieved as quickly as possible. The blood pressure should be lowered and kept down and the kidneys should be kept active. One's ingenuity is sometimes taxed to the utmost. The strict adherence to one plan of treatment has not sufficed in my experience. One must be ready to change the treatment as occasion demands, and in rare cases one needs all the latitude possible.

I have said nothing about delivery. This should not enter our minds until the cervix is dilated. Often the patients are cured without their going into labor. Usually, however, labor has already started or else begins during the convulsions. In such cases the labor should be conducted so as to avoid all shock. Whenever possible it should terminate spontaneously with the avoidance of anesthetics. Sometimes it is advisable to lift the head off of the perineum with low forceps when there is much delay at this stage. On one occasion I have done a version under sacral anesthesia when a shoulder presented, and once without any anesthetic when the patient stopped breathing and required artificial respiration after two consecutive convulsions. Both patients recovered, possibly in spite of my treatment.

What about the after-treatment? If the patient recovers without delivery and the toxemia persists, she should be delivered as soon as her condition warrants it. Polak strongly recommends that she be not permitted to leave the hospital undelivered. If she has been delivered and her treatment tapered off with bromides, chloral, and paraldehyde until there is no longer any danger of the convulsions returning and she has been cautiously put back upon an adequate diet, is our responsibility with that patient ended. In this connection, a recent article by Bund from Zange-

meister's clinic is of especial interest. Bund analyzed the subsequent histories of the cases of eclampsia that occurred in the Marburg clinic between the years of 1890 and 1914, consisting of seventy-six (sixty-four primiparae and twelve multiparae) women of whom seventy-two had one attack, three two attacks and one three attacks, a total of eighty-one attacks of eclampsia. Of these, fourteen died of eclampsia. Ten of the remainder were lost track of. Twenty per cent of the primiparae remained sterile as against the usual ten per cent sterility after the first confinement. Twenty per cent of those that became pregnant had eclampsia at a subsequent labor. Ten per cent of the entire series had developed chronic nephritis and 4 per cent epilepsy. Only twenty-five of the fifty-two women who could be traced were alive and well. Twelve had died of various diseases (*one* apoplexy at forty-nine years, *two* of heart trouble at twenty-one and thirty-five years, *one* heart trouble and nephritis at twenty-six years, *three* of unknown causes at twenty-five, thirty-five and forty-nine years, *two* of carcinoma at forty-four and fifty-two years, *one* of placenta praevia at twenty-eight years, *one* of tuberculosis at forty-seven years, *one* of influenza at thirty-two years). There was an immediate mortality of 30 per cent among the infants and additional 13 per cent mortality in the first week. The only cheerful thing about the report was that the children who survived the first week had as good a prospect for life and health as other children. However, one of these children died of eclampsia at her fourth confinement.

In view of this outlook for the eclamptic that survives, it is our duty to advise her that she needs careful medical supervision the rest of her life. If she shows no evidence of impairment of the kidneys, pregnancy may be permitted after three years, but she should have especially careful prenatal care.

Conclusions

The best treatment of eclampsia is the preventive one. Pre-eclamptic conditions should be relieved promptly so as to avoid subsequent kidney complications.

Eclamptics are easily shocked and should be guarded as far as possible from anything that produces shock.

The patient should be in a quiet, darkened room, and should be kept on her side. She should not be permitted to bite her tongue. Artificial respiration may be necessary.

Our first aim should be to stop the convulsions as quickly as possible, relieve the coma, and lower the blood pressure. Magnesium sulphate gives promise of being especially useful for these purposes. Morphin in full doses, chloral hydrate and sodium bromide are the most used drugs for controlling the convulsions. Venesection lowers blood pressure and relieves edema of the lungs.

Our next aim should be to supply fluids in the form of glucose solution per rectum (5 per cent), under the skin, or intravenously (10 per cent); and water by mouth if the patient is conscious, or by stomach tube if she is comatose.

The patient should be kept under the influence of sedatives for several days after the convulsions have stopped, during which time she should be fed very cautiously upon carbohydrates.

For the best results, the patient should have constant medical attention.

After the attack, the patient should be under medical supervision for at least three years, especial attention being paid to conserving kidney function.

References.

Alton, B. H. and Lincoln, G. C.: Control of Eclampsia Convulsions, by Intraspinal Injection of Magnesium. *Am. J. Obst. & Gynec.*, 9:167, 1925.

Baughman, Greer: Treatment of Eclampsia and Nephritis Complicating Pregnancy. *Southern M. J.*, 17:208, 1924.

Bear, J.: Eclampsia and Its Conservative Treatment. *Virginia M. Monthly*, 47:487, 1921.

Beck, A. C.: Conservative Treatment of Eclampsia. *Am. J. Obst. & Gynec.*, 7:677, 1924.

Bourne, A.: Case of Eclampsia Illustrating Use of Veratrone. *J. Obst. & Gynec. Brit. Emp.*, 29:432, 1922.

British Congress of Obstetrics & Gynecology, London Committee's Report (on Eclampsia): *Brit. M. J.*, 2:88, 1922.

Brunzel, E. Everett: A Statistical Review of the Toxemias of Pregnancy. *Am. J. Obst. & Gynec.*, 7:686, 1924.

Bund, R.: Uber das Spatere Befinden Eklamptischer und ihrer Kinder. *Zentralbl. f. Gynaek*, 49:2879, 1925.

Cathala, V. and Le Rasle, H.: L'incompatibilite Sanguine Foeto-maternelle est-elle, la Cause de l'eclampsia? *Rev. franc. de gynec, et d 'Obstet.*, 20:577, 1925.

Davidson, H. J.: New Procedure in Treatment of Eclampsia, with Water in Large Quantities. *Surg. Gynec. & Obstet.*, 36:280, 1923.

Davis, E. P.: Conservative Treatment of Eclampsia. *Therap Gaz.*, 46:385, 1922.

Dorset, Lee: Magnesium Sulphate in Eclampsia. *Tr. Am. A. Obst.*, 38, 1925.

Early, J. L.: Treatment of Eclampsia. *Virginia M. Monthly*, 49:595, 1923.

Fitz Gibbon, Gibbon: The Treatment of Eclampsia. *Lancet*, 1:666, 1923.

Gruhzit, O. M.: Eclampsia—Is it a Biological Necessity? *Am. J. Obst. & Gynec.*, 7:588, 1924.

Harris, John W.: The After-Effects of the Late Toxemias of Pregnancy. *Bull. Johns Hopkins Hosp.*, 35:103, 1924.

Haynemann, T.: Lumbar Puncture in Treatment of Eclampsia, *Zentralbl. f. Gynaek*, 47:186, 1923.

King, E. L.: Conservative Treatment of Eclampsia. *Am. J. Obst. & Gynec.*, 9:412, 1925.

Kosmak, Geo. W.: The Conservative Treatment of Eclampsia. *Bull. Lying In Hospital, N. Y.*, 11:33, 1916.

Lazard, E. M.: Preliminary Report on Intravenous Use of Magnesium Sulphate in Puerperal Eclampsia. *Am. J. Obst. & Gynec.*, 9:178, 1925.

Matas, Rudolph: The Continued Intravenous "Drip," with Remarks on Value of Continued Gastric Drainage and Irrigation by Nasal Intubation with Gastro-duodenal Tube in Surgical Practice. *Ann. Surg.*, 79:643, 1924.

McCord, J. R.: Treatment of Eclampsia—A Plea for Individualization. *N. Y. Med. J.*, 107:105, 1918.

McQuarrie, I.: Is Agglutination in Newborn Infants and their Mothers a possible Relationship Between Inter-Agglutination and Toxemias of Pregnancy? *Bull. Johns Hopkins Hosp.*, 34:51, 1923.

McPherson, Ross: The Conservative Treatment of Eclampsia. *Bull. Lying-In Hospital, N. Y.*, 11: 48, 1916.

McPherson, Ross: Consideration of the Pregnancy Toxemia Known as Eclampsia. *Am. J. Obst. & Gynec.*, 4:50, 1922.

Moran, J. F.: Treatment of Eclampsia, Then and Now. *Am. J. Obst. & Gynec.*, 3:155, 1922.

Ohnesorge, Victor: Ueber Blutgruppenbestimmungen bei Muttern und Neugeborenen. *Zentrabl. f. Gynaek.*, 49:2884, 1925.

Rubel, A. M.: Treatment of Eclampsia and Pre-Eclamptic Toxemia. *Kentucky M. J.*, 23:127, 1925.

Solomons, Bethel: The Conservative Treatment of Eclampsia, *Am. J. Obst. & Gynec.*, 10:884, 1925.

Speidel, E.: Conservative Treatment of Eclampsia. *Am. J. Obst. & Gynec.*, 9:320, 1925.

Standler, H. J.: Treatment of Eclampsia by the Stroganoff Method. *Am. J. Obst. & Gynec.*, 9:327, 1925.

Stevens, T. G.: Treatment of Eclampsia by Veratrum Viride. *J. Obst. & Gynec. Brit. Emp.*, 29: 426, 22.

Stroganoff, B. B.: Improved Prophylactic Method of Treatment of Eclampsia. *Lancet*, 2:62, 1924.

Stroganoff, B. B.: Treatment of Eclampsia. *Arch. f. Gynak*, 116:406, 1922. Abstr. *J. A. M. A.*, 80: 591, 23.

Thalhimer, William: Insulin and Glucose Treatment of Excessive Vomiting of Pregnancy. *Am. J. Obst. & Gynec.*, 9:673, 1925.

Titus, Paul: Hyperemesis Gravidarum; Treatment by Intra-Venous Injection of Glucose and Carbohydrate Feedings. *J. A. M. A.*, 85:488, 1925.

Toombs, P. W.: Conservative Treatment of Eclampsia. *Southern M. J.*, 18:541, 1925.

Tweedy, E. Hastings, & Wrench, G. T.: Practical Obstetrics. Ed. 4, London, Oxford University Press, 1919, p. 182.

Wilson, K. M.: Comparison of Results Obtained After Radical and Conservative Treatment of Eclampsia in Obstetrical Department of Johns Hopkins Hospital. *Am. J. Obst. & Gynec.*, 9: 189, 1925.

Medical Arts Building.

CHRONIC HYPERTENSION NEPHRITIS IN A CHILD, SHOWING UNUSUAL NEUROLOGICAL SYMPTOMS.*

By FRANK H. REDWOOD, M. D., Norfolk, Va.

In reviewing the literature on hypertension nephritis in children, one finds comparatively little in English and not a great deal in foreign journals. It is, therefore, rightly assumed that this is a rather rare disease in the young.

1. Boyd reports twenty-seven cases of nephritis, only two of which were chronic, and in none was the blood pressure high. There was blood in the urine in all cases and large amounts in some.

2. Marriott reports a case of hemorrhaghic nephritis in a boy six years of age, with a blood-pressure of 140 systolic. He believes the hypertension is due to a general capillary constriction, and the edema is due to an increase in the permeability of the capillaries rather than chloride retention.

3. Schwarz reports three cases, and classifies them as malignant hypertension nephritis. One of these cases had scarlet fever sometime before the onset of symptoms. The symptoms at the onset were vague, and all three cases complained of abdominal pain, which he thought was abdominal angina.

There were some other reports, but none in which the blood pressure was ever as high as the case reported here.

Case Report

A child of eleven years was first seen March 18, 1924, complaining of headache, pain in the eyes and nausea. Family history was negative with the exception of a very neurotic mother and a tuberculous father. She had had the usual disorders of childhood, except scarlet fever. She developed typhoid fever when five years of age. She had complained for sometime of so-called "indigestion," and the parents were told by her family physician that she had an infected gall-bladder which they were urged to have removed. This they refused to do. Her urine had shown an occasional cast from time to time. The headache dated back

*Read before the Seaboard Medical Association, at Norfolk, Va., December, 1925.

five years but had been very much worse during the six months before coming under my observation. The pain in here eyes was of two years' duration and apparently had not increased in severity.

The ophthalmologist who referred the case had found a papillitis in both eyes as well as a right ethmoiditis.

General examination showed a small child, apparently not in pain, who was well oriented and showed no mental disorders, except that she was probably somewhat mentally retarded. The reflexes were all present and equal on the two sides, and there were no abnormal reflexes of any description. The heart rate was 117, regular, and there were no murmurs. The cranial nerves were normal, except the second, which showed on the right side a papillitis of two diopters, and on the left a swelling of one diopter. The blood Wassermann was negative and the urine showed nothing abnormal. It was thonght at this time that the papillitis was due to the focus in the sinus and would disappear when the infection cleared up. One week later the sinus infection had improved. There was slight headache after reading, but the fundi showed no change. Vision was 20/15 in each eye and the visual fields were normal. One month later the infected ethmoid had entirely cleared up. She had no nausea or vomiting but had an occasional headache.

The patient passed from under my observation and was not seen again until October 5, 1924. The interval history was as follows:

Her condition had gradually grown worse, and nausea and vomiting had become more severe. She vomited after taking any food in her stomach, so that she had become somewhat emaciated. The headache had become more frequent and had increased in severity. For the past five days she had been in bed.

On examination, all mental processes were sluggish and she was drowsy. There was definite facial weakness on the left side. Both sides showed some adiadokokinesia. The right optic disc showed about five diopters of choking, with about three diopters on the left. The right patella and ankle reflexes were greater than the left, the left being almost absent. There was a Babinski on both sides.

The patient was referred for further study and advice to Dr. Coleman, of Richmond, who found, in addition to the signs already given, a blood pressure of 230 systolic, 170 diastolic, and four plus blood in the urine with a heavy trace of albumin. On further investigation, the blood was found to be from the left kidney, and this kidney showed a filling defect in the upper calyx, with dilatation of the pelvis. The kidney on this side was practically functionless. Blood urea showed 10 mg. per 100 c.c. of blood, and the non-protein-nitrogen was 22 mg. per 100 c.c. of blood. The spinal fluid pressure was 40 mm. of mercury; otherwise, it showed nothing abnormal. For the next month the headache and nausea became worse, the blood pressure ranged from 150 to 260 systolic, and the eye findings suggested an increase in the intracranial pressure. On November 6, 1924, Dr. Coleman did a right subtemporal decompression. On opening the dura, he found marked pressure with herniation of the brain, but there was very little subarachnoid fluid. She was discharged from the hospital November 19, 1924, showing general improvement in the eye grounds and the headache and vomiting had disappeared.

For two months after being home she had no nausea and little headache. Then the headache returned, as did the nausea, and there was some dizziness, which gradually increased. She became weaker, and finally died in coma the early part of March. Twenty-four hours before death the blood pressure was recorded at 290 systolic. Autopsy was done eleven hours after death.

Autopsy Report

On opening the abdomen the omentum was seen to be free. Pelvic organs were normal. There was very little fluid in the peritoneal cavity. The liver was slightly enlarged and the glall-bladder considerably enlarged; the walls were thickened and showed some evidences of chronic inflammation. There were no stones in the gall-bladder.

The lungs were grayish in color at the apices and of a dark red color at the bases. The bases were not air-containing and showed areas of lobular pneumonia. The heart was probably larger than normal and there was no epicardial fat. No scars were seen on sectioning the heart muscle. The endocardium was everywhere smooth and the valves appeared competent. The aorta was quite elastic.

The spleen was smooth on its outer surface; on sectioning, the pulp was dark red in color

and firm. The corpuscles were numerous and could be readily seen. The trabeculae appeared normal.

Both kidneys were very small and contracted. The capsule stripped with some difficulty, leaving a rough surface. The architecture, on sectioning, was distorted, and the division between the cortex and medulla was made out with some difficulty. Both were considerably thinner than normal and the glomeruli were not readily seen. The pelves were not dilated, and there was no ureteral obstruction. The vessels were quite sclerotic and stood up when cut. No area from which bleeding could have taken place was demonstrated.

On removing the brain a most marked degree of arterial change was noted. Both the large and small vessels appeared like pipe stems, especially at the base of the brain. The vessels, when cut, were somewhat resistant to the knife, there being apparently little elastic tissue left. The brain as a whole was somewhat edematous, but no definite cerebral lesion was demonstrated microscopically. The cerebral meninges appeared normal.

Microscopical study of the brain, kidneys and blood vessels showed the walls of the vessels greatly thickened with nodules of elongated thickly staining cells. There was some endothelial swelling with fatty detritus and globules within the cells. All of the vessels showed widespread thickening.

Comment

The patient presented signs of marked intra-cranial tension. After the hypertension was found and the investigation of the urinary tract had been done, it was thought by the investigators that the cerebral condition was due to hypertension. Decompression was done as a palliative measure for relief of headache, which it did accomplish for a short time. This case seemed to show the highest blood pressure reading ever recorded in a patient so young.

503-7 *Medical Arts Building.*

Life is very simple. Men don't pass you by
Just because you're wearing last year's coat or tie;
Friendship here is builded not on whims like that,
Men will not dislike you, being thin or fat.
So, if you're not winning all that seems your due,
Something is the matter, possibly with you.

—*Guest.*

SOME THOUGHTS ON DIPHTHERIA.*

By J. A. WRIGHT, M. D., Doswell, Va.

Diphtheria is an acute infectious, contagious, disease due to the Klebs-Loeffler bacillus and characterized by the formation of a fibrinous exudate or pseudomembrane at the point of infection, and by systemic symptoms which are due to the diffusion of the toxins formed.

Age: Diphtheria is very rare during the first year of life. It is also uncommon in adults, although no age is exempt. The most susceptible age is from two to ten.

Predisposition: Vigor of constitution does not seem to have any influence on susceptibility, the strong and healthy and the weak and delicate alike contracting the disease; weak throats, however, as those with diseased tonsils and adenoids do seem to predispose.

Transmission: Diphtheria is transmissible both directly from the patient and indirectly through persons or things used about the case. The indirect transmission, however, is probably rare. It is also spread by what are termed diphtheria carriers who are persons not sick but having the germs of the disease in discharges from the nose or throat.

Pathology: The germ of this disease was discovered by Klebs in 1883 and isolated and cultivatd by Loeffler in 1884. The favorite sites for its lodgment are the mucous membrane of the throat, larynx and nose. Exceptionally, it may be seen on the skin ,in the ear, vulva, conjunctiva, and other places. The bacilli remain localized at the seat of infection, but the toxins formed invade the blood and are responsible for the general symptoms. The bacillus may persist in the throat for weeks after an attack.

Incubation: This is variable, from two to five days being the average. One exposed may be considered safe after nine days have elapsed without development of symptoms.

Symptoms: These may come on very acutely or develop slowly. Many children are not seen for several days by the physician on account of mild and slowly developing symptoms. The symptoms and physical signs consist of the membrane, sometimes swelling of the lymph glands at the angle of the jaw, sore throat, painful deglutition, fever and the general symptoms due to the toxins of the disease.

Diagnosis: There is only one way to tell

*Read before the Hanover County (Va.) Medical Society.

diphtheria and that is by bacteriological examination. It is to be differentiated from tonsillitis and from the sore throat of scarlet fever.

Treatment: There is only one treatment for diphtheria. That is antitoxin. It is all important that it be given early. The constitutional symptoms due to the diffusion into the system are what kill. In diphtheria the system is poisoned by these toxins and the antidote is antitoxin. I feel sure that every case of sore throat showing any membrane should immediately be given a dose of antitoxin. We should not wait. We should always take a swab and have it examined later. If it were diphtheria we have gotten in on the ground floor. If it were not we have done no harm, only a little discomfort and a slight financial loss. These cannot be weighed against probable loss of life or damaged heart, or diphtheritic paralysis. I think we might except the case of a tonsil with numerous pin point exudates, but if there is any membrane of any size, we are not doing ourselves or the patient justice if we wait at all. Every physician practicing in the rural districts should always carry with him at least one dose of antitoxin, and on seeing for the first time any case that is the least suspicious he should give this at once, take a swab, but never wait to give the antitoxin until he hears from the laboratory.

As to the site for inoculation, I don't think it matters much. Some prefer the abdomen, some the back below the scapula, some the thigh. As a rule, I have used the buttock. Of course, strict antisepsis must be practiced with the injection.

There is some little danger of anaphylaxis in the use of diphtheria antitoxin as there is in the use of all horse serums, and some recommend a minute injection and waiting fifteen to thirty minutes before the real injection. This is probably a more or less wise precaution, but I personally have never seen a case of anaphylaxis in the use of any of the serums nor have I ever used the precautions mentioned.

Now as to the dosage: I am firmly convinced, and I think the majority of us who are giving diphtheria antitoxin regularly are, that the initial dose should practically never be less than 10,000 units. We gave much less in the past and I can remember when I never gave over 3,000 units. The initial dose is, as a rule, the most important. Many times it is the only dose necessary. I say do not temporize. Do not be afraid. I have never known it to hurt. Then why not give enough to do the necessary work? If you were putting out a blaze with a bucket of water you would not use the dipper. Let us use the serum method with this dread disease; 5,000 units may do the work, 10,000 is much more apt to do it. Ten thousand the first day is worth more than 20,000 the second day or the third day. So let us fight with the only real weapon, and let us get in our work on the first visit and make the dose sufficient to be reasonably certain.

As to subsequent doses, we have to govern ourselves by the effect of the first dose and the symptoms. If there is no noticeable effect from the first dose after twelve hours, or certainly eighteen, we should repeat it or give more. It is best to give it every day for several days rather than to wait if the case is not improving. In grave laryngeal cases and where seen late, 20,000 to 30,000 units are often given to advantage. I confess that I have not often given these large doses. I believe, however, if 10,000 units are given on the first day, those subsequent large doses are seldom necessary. I have had no experience with intravenous use of antitoxin. It should be easy to give but I have never found it necessary.

Prophylaxis: This is one of the most important parts of our subject. I will not speak of quarantine. We all understand the necessity of this. All children who come in contact with diphtheria should be immediately immunized with an injection of 1,000 units of the antitoxin. This will probably save them from contracting diphtheria from that contact. This immunity lasts probably three or four weeks and is not always perfectly sure. If they contract the disease, they usually have it in a milder form.

What I wish to speak of mainly in the way of prophylaxis is the use of toxin-antitoxin. This mixture of toxin and antitoxin in quantities sufficient to equalize one another has been found to render persons immune from diphtheria for a long period of time. We do not know as yet how long the effect holds good, many claiming it to be for life, while the majority feel it will be safe for a number of years.

We have, however, a simple test called the Schick test which, taken from time to time, will prove whether the toxin-antitoxin is still giving immunity and, if not, we can inject more.

It is not necessary to go into the technique of all this. Toxin-antitoxin is given in three doses, five to seven days apart, and immunity is not developed for one to six months.

The Schick test is very simple and can be done by any doctor anywhere, care being taken not to mistake the pseudo-positive for the positive reaction.

Of course when there has been a recent exposure to diphtheria, antitoxin should be given, but if toxin-antitoxin could be given to children not exposed and the Schick test applied at intervals and we could really get all or a majority of children inoculated, we would be doing a wonderful thing for our constituents and our community.

This is an opportunity not to be overlooked and I really think that in some way it should be brought before the public in some convincing manner so that we might save the little ones from this dread disease.

PRESENT METHOD OF DEALING WITH KIDNEY AND URETERAL STONE.*

By SEAVY HIGHSMITH, M. D., Fayetteville, N. C.

I have been induced to write this short paper on the management of stone in the kidney and ureter from the fact that I frequently have patients come to see me who have suffered from renal colic or been told that they had stones in the ureters who would want to have the stone removed and return home the same day. The impression seems to have gone out that one skilled in cystoscopic work can remove a stone at one sitting and let the patient get up and go along as though nothing had happened. As a matter of fact, most of the migratory stones of the ureters and a great many of the stationary or "silent" stones can be removed or caused to pass by skillful and persistent use of the cystoscope with proper bougies, dilators, and extractors. There are certain types of the "silent" or stationary stones that are practically impossible to remove from the ureter in this way, and a dangerous delay results if we depend all together upon this method.

*Read before the Cumberland County, N. C., Medical Society, October 16, 1925.

SUMMARY AND CLASSIFICATION BY BUERGER

Stones may be found in any part of the upper urinary tract, but they are more common in the kidney than in the ureter.

Renal Colic: (Migration of the Stone).—Renal colic occurs in 50 per cent of all cases of nephrolithiasis. These attacks are characterized by agonizing pains which appear suddenly in the loins. Pains radiate to the testicle and inner side of the thigh. In aggravated cases the pains may radiate throughout the entire abdomen and chest and be most severe in the back.

Sudden total anuria may be the first symptom of stone in the kidney or in the ureter. Strangury and frequent micturition are commonly observed. The urine is scanty, high colored, and has a high specific gravity.

Collapse symptoms are prominent: Cold sweat and feeble pulse. Nausea and vomiting common. During the attack meteorism may be conspicuous. Rigors may precede an attack. The temperature may be elevated up to 103.

After the attack the patient passes urine frequently and blood may be detected in the specimen. If there is a suppression of urine, uremia may follow. Following the acute attack and persisting for a few days the patient complains of more or less persistent pain in the back on the affected side.

It is difficult to palpate the kidney during an attack owing to tenderness and muscular spasm. The sudden cessation of pain signifies the return of the stone to the pelvis or its successful passage downward into the bladder.

Stationary or "Silent Stone".—a. Pain in the back. More often a soreness than an actual pain. May become severe and paroxysmal-like. While pain is usually referred to the affected side, it sometimes happens that the patient will complain of pain on the opposite side. Pains may radiate as in a typical attack of renal colic.

b. Hematuria. While bleeding is not profuse, it becomes more severe by excessive motion, and mitigated by rest. The greatest bleeding occurs with oxalic acid stones. Worm-like clots which commonly form in the ureter in these cases may be discovered in the urine. A trace of albumin plus a microscopic evidence of blood in the urine may be the only urinary findings which lead us to suspicion

stone. Oftentimes the first symptoms of stone are profuse hematuria associated either with or without pain.

c. The kidney enlarges in about 33 per cent of the cases. When hydronephrosis complicates stone, then the enlargement is very pronounced.

d. Day frequency of urination very common. Pain at the tip of this penis after voiding. Renal sand may be passed for years, as also fragments of stones. Uric acid calculi most common.

e. Danger of infection: Pyelonephritis, pyelonephrosis and, lastly, the liability to the development of hydronephrosis are to be remembered.

f. Gastro-intestinal symptoms: Vomiting and epigastric tenderness are common.

Cystoscopy is important not only for diagnosis but for treatment. In uncomplicated cases of calculus of the upper urinary tract, the bladder is normal excepting a slight hyperemia around the ureteral orifice, from which one may or may not observe a jet of bloody urine.

Ureteral catheterization is very useful to demonstrate location of stone. Examination of the catheterized specimen may show blood and crystals.

Stone in the lower part of the ureter may sometimes be palpated through the rectum. A stone in the ureter near the bladder may show a pouting or swelling of the mouth of the ureter, and the urine flows out irregularly from the obstructed ureter.

Stone high up in the ureter causes pain in the lumbar and subcostal region, and these pains radiate towards the groin, into the penis and the testicle. If the stone migrates downward, the pains will radiate towards the abdomen, groin and testicle. When the stone reaches the lower portion of the ureter, we will observe, in addition to the pain, vesical tenesmus and urinary frequency (the latter being conspicuous in renal colic).

Renal colic plus anuria invariably denotes occlusion of the ureter by a stone.

A wax-tipped catheter introduced in the ureter may be withdrawn showing scratch marks where the tip engaged the stone in the ureter.

Functional Test.—In non-infective cases no difference is observed in the two kidneys. In infected lithiasis a diminution of functional activity occurs together with evidence of pyelonephritis.

Roentgenography.—In almost all cases absolutely diagnostic shadows can be obtained by using the proper technic. Fifteen or twenty per cent of stones will not give a shadow to X-ray unless a radiogram is made. It might then be sometimes difficult to determine from the negative.

As to stones in the kidney, unless they can be induced to come down into the ureter by some manipulation or dilatation of the pelvis of the kidney, it is, of course, useless to attempt to remove them with the cystoscope.

The manner in which the stones are removed is by dilating the ureter sufficiently to allow the stone to pass down into the bladder. This is passed down by using, first, a small bougie or catheter, passing it to the site of the stone, gently manipulating it until it has passed by the stone in the direction of the kidney pelvis. In doing this you have dilated the ureter in proportion to the size of the catheter passed. The second bougie or catheter may be passed to the site of the stone and beyond. If possible to pass two catheters by the stone, the situation is, as a rule, well in hand because this insures dilatation of the ureter. If the catheters are allowed to remain in this position for several hours, the stones will so embed themselves into the catheter it will be withdrawn when they are drawn down the ureter. This is done very much in the same way that the cork was drawn from a flask in pre-Volstead days by passing a knife blade on either side of the cork, taking the two knife handles in hand, and making a pull.

I think the method of injecting sweet oil through the lumen of the catheter behind or above the stone is very helpful in causing it to come down as the oil is not only lubricating, but of a higher viscosity than the urine. It causes more pressure from above. If, when the catheters are withdrawn, the stone does not come down into the bladder, another twenty-four or thirty-six hours or even a few days may be allowed before another attempt is made, as the stone may pass in the meantime. In case it does not, one attempt after another may be followed up. Sometimes it is necessary to carry your patient over a period of several weeks before he is rid of the stone. The ureteral orifice may have to be enlarged by slitting with a pair of shears before the

stone can pass or sometimes even before a catheter can be inserted into the ureter. If the stone has come down to the ureteral orifice, it can easily be removed by this slitting operation and the application of the stone forceps to drag it into the bladder.

One can readily imagine that the urologist can not promise his patients to deliver the stone to him at one sitting; neither can he tell him just how long it will take by faithful cooperation. He can, however, insure success in almost every case in which the catheter can be passed beyond the site of the stone in the direction of the pelvis of the kidney. By persistent efforts the dilatation can be completed and the stone induced to come down. The point I wish to make in this paper is that, stones in the ureter of long standing and embedded by inflammation, induration, and scar-forming tissue, with a resulting stricture-like condition to such an extent that, by skillful and diligent effort, a sound or catheter cannot be passed beyond the point of blockage. I would advise the open operation upon failure at the first attempt.

I am using only two cases to illustrate:

1. The first case is that of a trained nurse, age twenty-four, who had always been well and strong until day of graduation. On her first private case she was taken quite ill with kidney colic, and was brought to the hospital. Temperature on entering was 100, pulse 120. She had pain in the right side; leukocyte count was 17,400. She was toxic; urine showed albumin, blood and pus. X-ray picture showed a stone the size of an almond in her right kidney. As soon as the patient's condition permitted, kidney was opened and stone removed. Patient slowly recovered from the operation until only a sinus was left leading to the kidney. This would sometimes heal and then again break loose with an escape of pus and urine. Repeated X-rays were taken, but no stone was shown in the ureter in the right side. Cystoscopy was done. A catheter could be passed to a point about three inches below the kidney pelvis. Obstruction was met, but catheter could not be gotten by. As no stone was revealed in X-ray, it was thought that the obstruction was due to a kink or stricture. The patient kept coming back to the hospital with recurring attacks of opening and closure of the sinus at point of old operation. At last it was found that she had a stone in the left kidney. This was removed by open operation, the wound healing promptly. Still the right side never returned to normal. I advised an operation on the right ureter at the point of obstruction, having in mind an embedded stone even though X-ray did not reveal it. The operation showed a stone the size of a large peanut so embedded it was impossible for the stone to move out of its bed or for a catheter to pass beyond it. The patient then made a good recovery. The old sinus from the right kidney promptly healed. As soon as the wound was sufficiently healed, the catheter was passed to the kidney and the point of old blockage was free. The patient returned to her profession and has worked steadily since.

2. Mr. J. W. W., consulted me September 26, 1925, for repeated attacks of renal colic which he had had for a period of over six weeks. He came to get the stone removed and to return home that afternoon. I advised him that I would not do any cystoscopic examination on him that day as he had to return. On examining him I found that he had a very small urinary meatus that would not at all admit a cystoscope. So, a meatotomy was done and an X-ray picture taken, which revealed a stone in the right kidney. The patient then returned to his home. On the following Tuesday, September 29th, he returned, having had three severe attacks in the meantime. On this date a cystoscope was passed in the bladder without difficulty. Bladder was normal. Right ureter congested and pouting. No. 6 catheter was passed to the kidney, passing the obstruction with much difficulty. Obstruction was met three inches below lower pole of left kidney. A second bougie No. 6 was passed up to the point of obstruction, but I was not able to get it by. Specimen of urine from the left kidney contained blood cells, debris, no pus. Patient was put to bed with catheter in place until the following day. As the urine passed freely, the catheter was removed in the meantime. He did not have any kidney colic and passed a good night. On the second day, September 30th, these catheters were removed and a No. 8 bismuth catheter inserted toward kidney, passing the stone with little difficulty. This catheter was again left in place. X-ray showed the catheter had passed the stone on the level with the 9th and 10 ribs. Catheter was left in place for three hours, after which two drams of sterile sweet

oil was inserted through the catheter above the stone, and the catheter removed. Patient still had no colic or discomfort. Considerable traction was made on the stone when the catheter was removed. The stone was passed by the patient on the second day after returning home.

Cumberland General Hospital.

ACUTE MASTOIDITIS IN INFANTS—REPORT OF THREE CASES.*

By G. B. DUDLEY, M. D., Martinsville, Va.

I want to report three cases of acute mastoiditis in infants. One is unusually young, being only fifty-six days old, another four months of age, and the third ten months of age. These three cases came under my care within thirty days, and two of them presented many identical features and symptoms, while the third varied somewhat.

Before giving the history of these cases, I wish briefly to review the anatomy of the mastoid in an infant, and also the precautionary measures one must pursue in operating upon them.

The temporal bone ossifies from eight centers. At the end of the fifth month, these have coalesced, but even at birth the bone readily separates into three parts—the squamous, and petrous portions, and the annulus tympanicus or processus auditorius. His annulus tympanicus represents the osseous canal of the adult, and by gradual development forms the bony external auditory canal. The ossicles, tympanum, and mastoid antrum of young children are nearly as large as those of an adult, but situated superficially. In young infants the mastoid antrum is situated immediately above the posterior tubercle of the annulus. It should also be remembered that the squamous-mastoid suture is not ossified at birth, and frequently presents large opening during childhood, so that, in making the initial incision for a mastoid operation upon a very young child, the point of the knife should not have too much pressure upon it or it may enter one of the openings and penetrate the cranial cavity.

It must also be remembered that at birth the facial nerve emerges not on the inferior surface, but on the external (lateral) surface of the temporal bone at a point close to the annulus and somewhat above its inferior border.

*Read before the Patrick Henry Medical Society, at Martinsville, Va., March 4, 1926.

At birth the mastoid process consists of a small flattened tuberosity containing but one cell, the mastoid antrum. At about eight years of age, the mastoid generally contains numerous other pneumatic spaces radiating from the antrum. At puberty the mastoid has become a distinct prominence, conical in shape, with its apex downward.

Case 24. Female infant, fifty-six days of age, referred to me by the family physician with the following history gotten from the mother:

Right ear had been discharging about one month; about eight days ago, a swelling began behind the ear. The child seemed to suffer very little, and had slept fairly well. This enlargement had gradually increased in size.

On examination I found the external auditory canal filled with thick, tenacious pus and a regular 'text-book picture" of mastoiditis in an infant, with the auricle pushed away from the side of the head and the region over the mastoid antrum very red and edematous. The child apparently had no fever. Immediate operation was advised, which I did that afternoon.

On making the incision through the periosteum, under ether anesthesia, I found the pus had already perforated the cortex, and little was left for me to do except to thoroughly clean out the mastoid antrum. An iodoform drain was left in for one week; in about two weeks the wound was healed nicely, and the ear had ceased discharging.

Case 25. Female child, ten months of age, well nourished, was brought to me by the parents with the following history:

A swelling came behind the left ear about one month previously. The family physician gave them a salve which caused the swelling to practically leave, but it soon returned and the child cried and picked at her ear. The salve this time seemed to do no good.

On examination I found the ear drum intact and normal in appearance, with no discharge, but another "text-book picture" of mastoiditis in a child, with the auricle pushed away from the side of the head, and the region over the mastoid antrum very edematous and inflamed. This child also had no fever.

Immediate operation was advised, which I did that afternoon. In this case, too, I found pus had already perforated the cortex, and, although more bone had to be curetted than

in the previously mentioned case, still there was not much "operating" to be done. I did a myringotomy, but practically no pus drained through the external auditory canal. Drainage was left out of the wound on the sixth day, and the child was discharged on the ninth day with the wound practically healed.

Case 26. Female child, four months of age, referred to me by the family physician, with the following history:

Child cried the previous night, and did not rest well. An enlargement was noticed behind the right ear, and the family physician called, who subsequently called me.

On examination I found an enlargement over the right mastoid antrum. This was very hard and seemed rather far back for the antrum. The ear drum was intact and normal in appearance. The child had a slight elevation of temperature.

A mastoid operation was decided upon, which I did that day at noon. The mastoid in this child was highly developed for a child her age, and the bone very sclerotic and dense. I had to use chisels, curettes, and rongeurs as if operating upon an adult. Little pus was found, but several days subsequently the wound drained rather freely and persisted for some days. A myringotomy was done, but no pus drained from the middle ear. This child made an uneventful recovery, but has more scar than the other two cases.

This case differed from the other two in that it was gotten very early, before much pus had collected in the mastoid.

Burch Building.

DIABETES.*

By A. T. FINCH, B. S., M. D., Chase City, Va.
Chase City Hospital.

In 1921 F. G. Banting and Charles H. Best announced the discovery of a ferment by isolation of the internal secretion of the pancreas. They had entered a field and made a real discovery where others had entered and failed. By 1922 they were able to demonstrate by animal experimentation that they had discovered an extract capable of combating diabetes mellitus. Early in 1922 this remedy was tried and found to be of great value as a remedy in diabetes of the human race. It was found after administering this remedy that patients were once again enabled to utilize carbohydrates in a normal manner. In May, 1922, the new ferment was made on a large scale and placed on the market as Insulin. It was made from the internal secretion of the islands of Langerhans. The supply was limited at first and it was distributed to a number of internists who used it as a remedy for diabetes. It was thoroughly tried out and found to be a remedy of known value. Insulin has passed the experimental stage and, while it is not a cure for all cases of diabetes, along with a properly restricted diet, it will cure many of the early or mild cases, and in those cases which it does not perfect a cure it does enable the diabetic to carry on, and enjoy a happy useful life as long as a proper diet and a proper diabetic regime, are maintained.

Insulin is now manufactured by several chemists, and is marketed by Lilly as Iletin, by Squibb as Insulin, and by others. Its price has been steadily reduced. It is now on the market in three forms or three strengths, and in using it one should always know the exact strength by units. It is standardized on rabbits. A unit of Insulin may be said to be one-third of the amount required when injected under the skin to reduce the average blood sugar over a period of five hours to 0.045 per cent in a normal rabbit, which is about two kilograms of body weight. It is made in five, ten and twenty units to each cubic centimeter of solution. Clinically, it is found that one unit of Insulin enables diabetics to metabolize an average of fifteen to thirty grains of glucose. This rule may vary in different patients. Insulin is administered subcutaneously, and is best given half an hour to an hour before meals. It should be injected under the skin, not into the skin, nor deep into the muscles. The site of the injection should be wiped clean with a proper antiseptic solution, as in giving any hypodermic. The skin areas used are the outer side of the thigh, the upper middle arm, the buttocks, and the abdomen. It may be found advisable to permit the patient to choose the least painful part, and it is well to use different parts, and not to use just one spot all the time.

Metabolic Relations in Diabetes

That one may have a clear conception of diabetes it is well to have some idea of what occurs in the normal individual. The average adult diet needed to furnish the body with

*Read before the Southside Virginia Medical Association at South Hill, December 8, 1925.

the necessary heat and energy consists of three hundred to four hundred grams of carbohydrates (starches), one hundred grams of proteids (meats), and one hundred grams of fats. The carbohydrates are absorbed in the blood stream as glucose (a kind of sugar), and this furnishes a readily combustible fuel which, if not required by the body, is stored in the liver and muscles as glycogen. The protein is broken up into amino acids and is absorbed as such. Fifty-eight per cent of the protein ingested is available and may be utilized as carbohydrates. The remainder may be used to replace tissue waste due to the daily wear and tear of the body. The fats are digested as fatty acids and glycerine. The glycerine content of the fat may be used as glucose up to 10 per cent. In order that fat may be used by the body there must be coincident combustion of carbohydrates. The amount of glucose necessary to burn fat is about one part of glucose to three parts of fat. In normal persons, after taking food, the blood sugar rises. Glycosuria is not produced, however, because the normal pancreas secretes sufficient Insulin to maintain blood sugar at a normal level. Should the pancreas be diseased and too little Insulin be secreted, we will have glycosuria or the onset of diabetes. The treatment of diabetes aims at supplying the patient with the right amount of Insulin. This is done in two distinct ways,—first, by changing his diet so as to diminish his intake of carbohydrates: second, by putting Insulin into his blood. If, after cutting off the carbohydrates, his secretion of natural Insulin is not enough to balance his blood sugar, then, by testing the blood and urine, we estimate the dose of Insulin needed, and, by careful watching these two and cautiously increasing our Insulin, we soon find the amount to give on a certain diet and on doing a certain amount of work. By giving the pancreas less work, as by furnishing the Insulin, we enable the pancreas to recuperate, and in quite a number of cases, if begun early before the internal cells of the pancreas are destroyed, we may entirely relieve this class of cases.

Body Requirement of Food

Vital processes and body action require certain amounts of fuel. These must come from ingested food or from the tissues of the body itself. The resting adult requires twenty-five calories per kilogram (2.2 lbs.) of his body weight in order that his own tissue reserve may not be drawn upon. Exercise and work increase his food requirement, so we must consider the work, the weight and the general requirement of the body, in making a diet for the patient. Growing children often require as much as seventy calories for use per kilogram of body weight and of proteins alone as much as three grams per kilogram of weight.

Diet in Relation to Diabetes

Primarily, all cases of diabetes are dietetic and in quite a number of cases the disease can be cured by diet alone. In many cases it is best to starve the body for twenty-four hours and then place the patient on a restricted diet, seeking by a low caloric diet to restore the diseased pancreas to a state of rest so it may cure itself. Or, it some times become necessary to give a diet high in fats, depending on the fact that combustion of a given amount of glucose will enable the combustion of a calculable amount of fat. If by restricting the diet and resting the patient we cannot remove the sugar, we must then give the body some Insulin. The administering of Insulin may be once, twice, or three times daily, preferably half an hour before a meal. Many times a single morning dose is sufficient, and this is to be increased daily until sugar is removed from the blood and urine. Each day we administer Insulin we must make a test for sugar in the urine. We should have the daily out-put collected and tested every morning: if we find sugar, then we can give our dose of Insulin. We should make a quantitative analysis of the urine so we may calculate the amount of Insulin to use. When a fairly constant excretion is obtained, the dose of Insulin is then calculated. One unit of Insulin will cause the disappearance of 1.5 grams or twenty-three grains of sugar from the urine. For example, if the patient's daily out-put of sugar is 230 grains per day, ten units of Insulin should cause it to disappear from the urine: if it does not, we should use a small increase, very small and very cautiously. Now, having rendered the patient sugar-free, we permit an increase of the diet, allowing a more liberal use of the carbohydrates, and watch patient. The patient should be finally put upon a dose of Insulin that is just sufficient to prevent glycosuria and to maintain a normal blood sugar

level. Blood sugar estimation and determination are most helpful, but are not as essential if the urine is tested daily and watched for sugar. When a diabetic receives too big a dose of Insulin, the blood sugar falls below 0.1 per cent per 100 and we have hypoglycemia (low blood sugar) to deal with, and then we have a train of serious symptoms to begin. Untreated hypoglycemia is dangerous, and is the one danger associated with Insulin. Careful and intelligent supervision by the physician and intelligent co-operation by the patient will avoid this trouble. But, should we have a case of hypoglycemia, we give sugar, orange juice or candy. The early symptoms of an over-dose of Insulin are:

1. An unaccountable restlessness and sensation of impending trouble, associated with a feeling of tremor in the limbs, especially the legs.

2. Marked hunger, with weakness and fatigue.

3. Perspiration, which is often profuse, and pallor, dilated pupils, sometimes a flushing of the face, and increase of the pulse rate to 110 or 120. If these warning symptoms are disregarded and more Insulin given, or some steps are not taken to counteract or relieve the symptoms above, further serious symptoms will develop, as disturbed vision, dizziness, aphasia, loss of memory, emotional excitement and delirium. These will be followed by marked lowering of blood pressure and collapse, unconsciousness and, finally, death.

Hypoglycemia usually follows the use of too much Insulin,—too large a single dose or too many smaller doses—increased activity of the patient's pancreas (getting well) after the long use of Insulin, the injection of Insulin too long before meals, decreased food absorption as when a meal is missed, and when the patient develops severe diarrhea; also by unusual exercise which increases the metabolism of carbohydrates by the patient.

In the treatment of hypoglycemia, the symptoms, if noticed promptly, are quickly relieved by taking glucose (sugar, orange juice, candy, syrup or other sweets); corn syrup in tablespoonful doses every fifteen minutes quickly relieves. If collapse has occurred, corn syrup may be diluted and given by the stomach tube. Ten to thirty grams of sterile glucose may be given in a 10 to 50 per cent sterile solution intravenously.

Hypoglycemia with coma must be closely watched and guarded against by frequent blood sugar and urinary sugar estimations, preferably the blood sugar test.

Owing to the impairment of metabolism in diabetes, acidosis is frequent, indicated by acetone bodies, diacetic acid appearing in the urine. Diabetic acidosis should be differentiated from acidosis due to complicating conditions, such as diarrhea, prolonged vomiting, head injuries, starvation or apoplexy. A diabetic patient may be subject to simple ketosis or coma depending on the amount of glucose that is being metabolized in the tissues of the body. Simple ketosis is indicated by the presence of acetone bodies in the urine, and is readily overcome by proper dietetic supervision. When defective metabolism is more pronounced, symptoms of air hunger, drowsiness, fatigue, restlessness, soreness of muscles of the abdomen, and nausea are complained of. If acetone bodies are in the urine, we have a condition of acidosis, and there may be a distinct odor of acetone on the breath. Blood analysis should be done to determine the amount of blood sugar and Insulin should be given promptly and boldly in order to prevent diabetic coma. Ten to twenty units should be given every two or three hours depending on the clinical symptoms and the urinary and blood findings. During this time of giving large doses frequently, and in serious cases, it is wise to give by mouth one gram of glucose for each unit of Insulin. If necessary, a retention catheter should be placed in the urethra and kept there so a specimen of urine can be obtained every hour to check up on test. The treatment of acidosis should include rest, warmth to the extremities, and five or six ounces of warm fluid should be given every hour. The large bowels should be thoroughly emptied and a 5 per cent solution of soda may be given by bowel continuously. The diet should be so adjusted that a minimum of ketone producing bodies are taken in the food. The bicarbonate of soda may be given by the mouth in two and three drachm doses until five doses are given, and Insulin is given every six hours in moderate doses. The diet should consist chiefly of carbohydrates until the urine test shows a marked decrease in the acetone bodies. In the acetone cases one has to be very cautious in the diet; we must increase the proteid diet first, then the fat can be increased,

and, on the subsidence of the acetone bodies in urine, the diet and Insulin may be regulated until the urine is sugar free.

When a diabetic patient is continuously drowsy and delirious and has an odor of acetone on the breath (sweetish odor), diabetic coma is threatening or present. This condition can be combated effectively by using large doses of Insulin, intravenously, and at the same time you must give one gram (15 grains) of glucose per unit of Insulin, administered either by mouth, rectum or intravenously. This must be done to prevent hypoglycemia. As absorption from the stomach and bowels is not dependable in these coma cases, it is best to give this antidote, glucose, in a 5 to 50 per cent solution (sterile) intravenously. Injection should be made not faster than ten c.c. per minute of the glucose solution. If there is any rise in the pulse, discontinue temporarily. A catheter should be kept in the urethra so that the urine may be tested often. I have found that twenty units of Insulin and twenty grams of glucose can be given every four hours for three or four doses. Discontinue this as the patient improves, except that the Insulin should be continued two or three times a day. The initial dose of Insulin for coma cases should be given as soon as the diagnosis is made. If intravenous administration is impossible, give fifty units subcutaneously and administer the glucose by stomach tube. Glucose is now put up in ampules for intravenous use. In cases of diabetic coma, speed is a safe plan,—the first hour of treatment is most vital.

In cases of gangrene, acute appendicitis, goiter, cataract, etc., surgical treatment may be applied to diabetic cases with comparative safety and little added risk when Insulin is used.

A diabetic patient should be *taught* the character of his disease, also that most of the cases can be relieved. It is advisable, however, to have the patient for a while in a hospital where instructions as to proper diet may be given, and where he may learn the tests that are to be made. A patient should be taught a simple test for sugar in the urine, likewise how to administer Insulin hypodermically, and how to manage and weigh his diet. This is very important. With a knowledge of his condition, he may, by making the tests himself, regulating his diet and administering his Insulin, soon learn how to care for himself intelligently. He should be directed to report to his physician once a month for a check up. We have found this to be the best way to handle these cases.

In handling a good number of patients, we have found the following "*Dont's*" are good:

Don't break diet, you are the one who suffers.

Don't over-work or over-play; worry and fatigue are borne badly by diabetics.

Don't neglect the bowels or the skin; regular movements and a clean skin will do much to prevent boils and gangrene.

Don't forget to test daily the urine for sugar and diacetic acid.

Don't experiment with new foods; if in doubt, consult your physician.

Don't grow fat; keep ten pounds underweight.

Don't try what Mr. Brown or Mrs. Smith use for diabetes; you are neither of these; your case may present many variations. Consult your physician; he studied your case as well as your body.

Don't grow careless; it is the careful invalid that lives the longest and happiest.

Don't forget that there are two strengths of Insulin; verify the strength on the label.

Don't alter your diet or your dose of Insulin unless directed by your physician.

Don't wait for symptoms of hypoglycemia to become serious, but take glucose. Glycosuria is safer than hypoglycemia.

Don't delay a meal after taking Insulin. If you are vomiting much, omit the Insulin.

Don't forget sterilization of the syringe, needle and the skin, and the rubber stopper of the Insulin bottle before giving yourself a dose in the arm.

Don't forget to consult your physician at any time if in doubt,—safety first, last and always.

We have had at the Chase City Hospital quite a number of cases of diabetes, and have cured a number. All that we have been able to teach our plan of procedure have been relieved. I will take a few of the cases from the file, the first two being of the mild type.

Mrs. E., entered the hospital June, 1924, and remained ten days. Blood sugar was .34; examination of the urine showed a specific gravity of 1.030, with 2 per cent of sugar. The patient was starved one day, and then put

on restricted diet. She was given two doses of Insulin, each 5 mils. of a 20 unit strength. Her urine and blood cleared immediately and she was taught the tests and how to pick her diet. She left the hospital in ten days entirely recovered and sugar free, and has not found it necessary to take Insulin since. She was given a liberal carbohydrate diet, and we have tested her urine every month for the past year and she has been free from sugar.

Another case was that of a child brought in for tonsillectomy. Urine was found full of sugar. The parents were advised to keep the child with us so we might first remove the sugar and give the child a chance to get well. This advice was refused and they took the child home; in two weeks it died. This case is mentioned to show that sometimes one may have diabetes and not be aware of it; also to show that if I had operated for removal of the tonsils (which were large enough to meet in the throat), the child would prabably have died and tonsillectomy would have been blamed. I also believe this child was neglected in not having treatment instituted for a disease that in many cases can be cured.

Case No. 1223 was Mr. W., whose urine showed a specific gravity of 1,040, with 8 per cent sugar. Blood sugar 1.46. This case was starved for twenty-four hours and placed on restricted diet. He was given 1 c.c. 20 unit strength of Insulin night and morning for two days, after which this was increased slightly. The urine was kept sugar free. Insulin 1 c.c. once daily was continued, together with a restricted carbohydrate diet. This patient was an old man and his daughter was taught to make the test for sugar and to give the Insulin. He did well as long as he kept up his diet, but whenever he would break away from this, he would have to increase the dose of Insulin or suffer. He finally got so that 1 c.c. of 20 units Insulin given three times a week would hold him sugar free. He has been seen every month by his physician, and is doing well, but has to take some Insulin occasionally.

Mr. G., weight 200 pounds. Sugar present, 120 grains being found in twenty-four hours. A few ten unit doses of Insulin and a carbohydrate free diet reduced all sugar. Insulin was then withdrawn and moderate restricted diet given. Patient shows no sugar as long as he adheres to his diet, but when he breaks it, we find a small amount. Patient has only used diet for one year.

Mr. W., had diabetic coma, preceded by drowsiness. Sugar was very high. Insulin was given every four hours (twenty units) and watched. This patient recovered. His sister was taught to make the sugar test and give Insulin. He has been under observation for three years, and never has been sugar free except while in the hospital, but he has been able to work and make a crop for the past three years, under a restricted diet and with the use of 20 units of Insulin before dinner and 10 units before supper.

Mrs. E., showed urinary sugar—8.33 per cent. Relieved by Insulin and diet. She reports once a month, and every time she breaks from diet or omits a dose of Insulin, 10 units daily, she finds sugar. She is able to work.

BIBLIOGRAPHY.

Diabetes. Harris—*Journal A. M. A.*
Hypoglycemia. Harris—*Southern Medical Journal.*
Diet in Diabetes. Banting—*Toronto Journal.*
Diet in Diabetes. Joslin.
Insulin. Watson—*Southern Medical Journal.*

Chase City Hospital.

BONE INFECTIONS.

By ALONZO MYERS, M. D., F. A. C. S., Charlotte, N. C.

The results of pyogenic infection of a bone are:

1. New bone production, usually with increased density and thickening. This is a reparative, reconstructive process. It requires no treatment, except in efforts to preserve bone length and, sometimes, to correct deformity.

2. Periostitis. This rarely demands any surgical treatment. It is a part of the inflammatory process, and subsides with the subsidence of the bone infection.

3. Bone destruction and suppuration are the important pathologic processes in chronic osteomyelitis—a necrosis that goes on, often over a period of years, to the production of sequestra of various sizes. This necrosis is associated with, and is the essential cause of, continued suppuration and, often, sinus formation. When these sequestra are extruded or removed, the sinuses usually close and the suppuration ceases completely, unless some undetached bone is still undergoing necrosis, or until the attenuated infection in the bone initiates a later cycle of necrosis and sequestrum formation.

The relationship between bone necrosis and suppuration establishes two important principles in the surgical care:

The first of these is that one should wait until a sequestrum has actually formed before operating on the bone. One should provide, if necessary, adequate drainage through the soft parts; but if there is no actual sequestrum present, he should delay further procedure and check sequestra development by means of the X-ray. To chisel away more or less necrotic bone before there is a complete sequestration is not a good practice, though a common one.

The second principle is to content one's self, for the time being, at any rate, with the removal of the offending sequestrum or sequestra. This may be all that is necessary to effect not only cessation of suppuration but also definite healing.

We too often yield to the temptation to perform an extensive osteotomy in these cases of chronic osteomyelitis. One hopes by chiseling and scraping away to a solid column of so-called healthy bone to eradicate the disease process at once and to effect a prompt and permanent wound closure, but, instead, the trauma is inviting fresh sequestrum formation.

The importance of the shallow bone trough to afford an opportunity for contact with the overlying soft parts, is an accepted mechanical principle, which has, however, often made necessary the removal of extensive ledges of healthy bone in cases of chronic osteomyelitis, when a simple sequestrectomy might have served as a primary operation. I believe it is better to delay the plastic osteotomy until its necessity and its extent are more definitely determined, and until the field is more nearly aseptic. To effect cessation of suppuration, the removal of the dead bone is much more important than the removal of overlying healthy bone. In spite of preconceived notions, it is by no means necessary to remove bone over the length of a suppurative process, and probably all surgeons have sometimes seen bone cavities heal over after sequestrectomy, without removal of their sides, and have even occasionally observed the phenomenon of a large bone defect healing by granulations.

We are all familiar with the work done on bone infections by Dr. Jos. A. Blake, of New York, during the World War. Although I can not quote him verbatim, I am familiar with his teachings and practices on this subject, since I was fortunate to have thirty-four months' service under Dr. Blake in the French-American Orthopaedic Hospital in Paris. I feel, therefore, I should impress the necessity of conservatism in the operative treatment of osteomyelitis. I have seen a great many cases in which resection of the bones was done, and in the majority of them regeneration had not taken place. I have now a child who had a resection of the tibia, two and one-half years ago. At present he has two stalactites, whose points are at least an inch apart.

In the operative treatment of this condition, the pathology of the disease must be considered. First of all, there is the destructive period, when the infection is progressive. The destruction in this period is due to the toxin of the organism, and to the interference of circulation, this latter being due to thrombosis, the increased intramedullary pressure and to the stripping of the periosteum. The indications for treatment at this time are, first, to save life, and, secondly, to give a functional limb. To save life and to prevent the destruction of the bone, the pressure within the medullary cavity must be relieved, and this relief of pressure must be carried out with as little injury to the circulation as possible. I feel, therefore, that at this period an operation as simple as possible should be performed, and that is an incision in the soft parts with trephining of the bone to obtain free drainage. While the constructive period is progressing, it is at times necessary to drain either the soft parts or the bone to relieve abscesses that have formed. No attempt should be made to remove the sequestrum until it has fully formed, and then this should be done with as little injury to the soft parts (periosteum and bone) as possible. The best technic is usually to place the tourniquet on the limb, to cut down on one of the sinuses, to enlarge the opening of the cloaca and to tease out the fully formed sequestrum. When the sequestrum has been removed, the sinuses will usually heal rapidly. The difference between debridement of soft tissues and of bone is that the circulation of the soft tissue is in a direction of from within out, while the direction of the circulation to the bone is from without in; therefore, any radical operation on the cor-

tex of a bone is going to destroy large blood vessels rather than the terminal ones.

As an interne I was taught in acute osteomyelitis to chisel away the cortex and cancellus over the full extent of the medullary suppuration (often the entire length of the diaphysis) and then vigorously to scrape out the medullary cavity, thus taking away its surrounding cancellous bone. I am sure that the latter step, especially, is a very bad practice. The marrow pus can be adequately removed by far gentler means. The cancellus is important for bone regeneration and should be preserved as far as possible. As T. Wingate Todd, of Cleveland, has said, "Cancellous tissue must be conservatively dealt with and under no circumstances removed entirely. It is the bone abscesses which are 'thoroughly' curetted out so that only the compact shell remains, which results most disastrously from the point of view of healing. Especially is this the case in those instances in which pure carbolic swabbing is used to finish the destructive work of the curette."

I believe that one can accomplish his purpose equally by making drill holes of sufficient size and number, through which the medullaris can be drained. That intervening corticalis may necrose is not important; extensive necrosis may also occur after the free osteotomy. In a case of fulminating osteomyelitis of the humerus and staphylococcemia in a little girl, I made a drill hole at the upper and one at the lower end of the diaphysis, and removed the suppurating medulla by means of a strip of gauze passed on a probe from one opening to the other. The child made an excellent recovery. A sequestrum formed at each drill site, and when these were removed definite healing took place. As compared with osteotomy the full length of the humerus, this child was spared prolonged hospitalization, extensive scarring and, probably, deformity. I confess that, especially when the periosteum has been stripped up by pus, I sometimes yield to the temptation to remove as much of the presenting bone substance as is suppurating. I think, however, that this is not necessary if drainage is provided by multiple trephination; the bone that will not survive will exfoliate spontaneously.

While subperiosteal abscess is fairly common in acute osteomyelitis, a chronic subperiosteal abscess is only occasionally encountered. I have had during the past year a number of cases of chronic collections of pus within the bone, abscesses which have interested me greatly. The discrete abscess in the cancellous tissue has been long known as Brodie's abscess, and abscesses of the cancellous substance of the bone show clearly in the roentgenogram.

As contrasted with abscesses elsewhere in the bone, a chronic accumulation of pus in the medullary canal, like acute suppuration therein, often does not show as such in the roentgenogram. The appearance is then merely that of the associated osteoperiostitis. There is, however, this suggestion for a diagnosis in the film: there may be very little external thickening of the bone, and the osteitis spreads centripetally, encroaching on and sometimes, in one or more places, obliterating the medullary cavity. This internal thickening is by dense, dry bone, and such an osteitis or osteoperiostitis (when, by its appearance or otherwise, syphilis can be excluded, and when there is no evident necrosis or cortical abscess) indicates the possibility of a medullary abscess. If the medullary cavity is invaded by osseous growth in such a manner as to surround an "island" of pus, such a central abscess will appear in the film as a dark area, unless, indeed, the surrounding bone is so thick and so dense as to obscure the picture of the cavity within. The bone surrounding the abscess is usually of greatly increased density, but sometimes the cavity is in bone of normal or nearly normal density.

Chronic bone abscesses, central or cortical, are often, if not usually, residual from an osteomyelitis active even twenty or more years before the abscess makes its presence known. X-ray in a case which showed solitary, chronic, sterile, cortical abscess of the femur in a young woman whom I operated on within the past year, gave no evidence of any antecedent osteomyelitis or other discovered or remembered infection. In another case, the hip of a woman with the X-ray and clinical signs of a pea-sized bone abscess in the intertrochanteric region, of a month's duration, developing eighteen months after a trauma (fracture of the margin of the acetabulum), a small area of softened tissue was found, surrounded by dense bone, but there was no pus. Pathological report showed a circumscribed non-suppurative osteomyelitis.

It is sometimes difficult to decide whether a small chronic abscess is cortical or subperiosteal in origin. Whether only a drop or two of pus is found in the cortex or several drams in the medullary canal, chronic bone abscesses have a uniform symptomatology,—persistent pain (often radiating and mistreated for "neuritis" and "rheumatism") and distinct localized bone tenderness. The condition is usually afebrile but sometimes febrile (100, even 101). Chronic bone abscesses tend to become sterile, that is to say, the organisms in the pus (usually staphylococci) are dead or much attenuated. The recognition of this phenomenon has led to treatment of these non-perforating abscesses, large or small, by simple evacuation through a small drill hole.

With the patient under an anesthetic, preferably nitrous oxid, an incision ordinarily about two inches in length is made through the skin and the underlying muscle is split, or retracted, to expose the periosteum. Through this and into the bone, at a point determined by X-ray or by the level of maximum tenderness, a drill from one-eighth inch to one-fourth inch in diameter is driven deeply enough to permit the escape of pus. If, perchance, the situation of a small abscess has not been estimated accurately enough for it to be thus tapped by the first opening, other drill holes can be made with little damage to the bone, or the surgeon may defer the completion of the operation to determine roentgenographically the relative levels of the abscess and his first drill hole. With the escape of pus, the drill is removed and nothing else is introduced into the bone, no probe, curet, or gauze packing. A culture is made from the pus, to determine what, if any, living organism it contains. A smear is also obtained and examined at once. (Often the smear shows a few staphylococci and the culture remains sterile). A small drain of folded rubber dam is laid in the soft parts down to, but not into, the opening in the bone, and the wound is otherwise closed by sutures. A simple gauze dressing completes the operation. The patient is immediately relieved of his pain. The drain is to provide for any further escape of pus from the bone, and to act as a safety valve in case of possible suppuration in the bone cavity or the soft parts, caused by dormant organisms awakened to activity. It is removed, usually without replacement, in three or four days, i. e., as soon as discharge has practically ceased. The small opening in the soft parts is then allowed to close and, ordinarily, healing of the entire wound is complete in ten days or less, few of which, usually, are spent in bed. Contrast this with the prolonged disability and invalidism, not to speak of the scarring and deformity, of wide-open osteotomy and slow "healing from the bottom," with its inherent risks of sequestrum and secondary operations.

Occasionally a small ring-like sequestrum forms at the drill site, and final healing is delayed until this escapes. The soft parts are healed before the opening into the bone; and, in turn, the drill hole fills with bone long before the abscess cavity does. Roentgenograms will often show this cavity in the bone persisting months and years, filled, probably, with granulation or fibrous tissue.

Walter Martin observed that cavities may fill with fibrous tissue and heal over while the bone defect is seen in roentgenograms to persist. Of Brodie's abscess, he said that if one of the walls of the cavity is cut away so that there is no over-hanging roof, the soft parts can be brought together and the skin sutured, as recommended by Watson Cheyne twenty-five years or more ago, for "the micro-organisms have not sufficient virulence to infect the blood clot." Martin believes that this is the most satisfactory method for small, chronic, localized abscesses surrounded by eburnated bone. It is, however, much more of an operation than the equally curative procedure of simply drilling into the abscess under nitrous oxide and it would be a rather mutilating operation if applied to unroofing an extensive collection of pus in the medulla. Bevan, of Chicago, and McWilliams, of New York, each also recorded the treatment of chronic bone abscesses by freely removing overlying bone, applying chemical antiseptics, and then closing the soft parts over, Bevan by primary, and McWilliams by delayed suture. The abscesses being sterile or nearly so, such osteotomies are unnecessary as the result of the simpler method described. The majority of the cases I have done thus far have proved entirely successful, including those in which the pus was not sterile, in two of which the overlying skin was somewhat red and the patient had had a slight daily rise in temperature. I believe, however, that healing may not

always promptly take place. It is conceivable that, as the the result of introducing a secondary infection or of the awakening into activity of dormant organisms, suppuration may continue and require further operation. Even accepting such a possibility, there is much to be gained and little to be lost by a trial of the simple minor operation of merely draining the chronic bone abscess through a small hole.

HEALTH IN RELATION TO NATIONAL DEFENSE.*

By W. ARMISTEAD GILLS, M. D., Richmond, Va.
U. S. Navy (Retired).

President Cleveland said that publicity was the people's greatest protection. If the sickness of our sailors and marines who occupy naval hospitals while suffering from preventable diseases were prevented, it would materially strengthen national defense and the United States Treasury. Would a private business enterprise make a partial survey of the operating machinery and limit repair to such incomplete examination, then expect efficiency from that portion which had not been surveyed and repaired? I doubt it, as few organizations have one hundred and fifteen million people to contribute to their support, who would be willing not to have an annual balance sheet discussed in the open, especially when it concerned the health of their loved ones, whom they had either loaned or contributed as well.

One of our admirals remarked a few years ago,—he'd rather go to sea with a physically fit crew and a poor ship, than a physically fit ship that was manned by physically unfit sailors. Times seemed to have changed. For well nigh two years, investigations and discussions have been limited to gun elevation, bombs, naval bases, Pacific manoeuvres, air planes, dirigibles, disarmament, Australian cruises, Arctic expedition, reconditioning ships, etc., and not the first person has "*elevated*" his voice *aloud* in behalf of the "man behind the gun."

Is this the result of tradition, custom, apprehension, or disinterest? One thing is certain: such silence is *not due to law.* Have we become callous to things human, or is it that the type of country lad, who protects the flag on the high seas, represents *uninfluential* homes? Until some *wizard invents automatic devices* to operate our defense machines, they must be operated by physically fit men, whose status at present is not commensurate, when compared with perfected ordnance. Great good would be derived from an annual human accountability, discussed by the people on "Navy Day." Total maintenance of the Navy within a decade cost $6,980,641,947, and, in my opinion, the people ought to know more about such expenditures, with the idea of tax reduction. Tuberculosis, for instance, is incompatible with a fighting machine representing the greatest nation on earth.

As soon as I determined that sickness, pensions, and deaths were taking place in our Navy in time of peace, for the most part preventable, being inimical to the nation's welfare, I commenced a survey, in keeping with my oath of office, which was February, 1919, completing the task January, 1924, when I was retired for physical disability. During this period, I traveled 40,000 miles by land and sea, writing my findings into two books, which I desire to get before Congress for necessary reform, in the interests of humanity, economy, and national defense.

The Medical Corps, United States Navy

With the removal of certain traditions, there can be no more attractive berth for a doctor of medicine, desirious or serving humanity and his own flag, rather than seek such a billet as a foreign medical missionary. While the salary is not so attractive, the many perquisites, in my opinion, outweigh the hardships of civil practice. Our present system appears not only necessary to advertise in order to obtain physicians, but they are untrained upon entrance, which, to my mind, is an injustice to the enlisted man. The Surgeon General recites in his annual report to the Honorable Secretary of the Navy, for 1923, page 2, that forty-three medical officers resigned their commissions, and that 12,000 letters were written to eligible physicians, endeavoring to recruit the corps, which I believe has been practically completed. Our guns are selected and our battleships are constructed by mature ordnance experts and naval constructors, respectively; besides, their physical welfare is discussed with the people.

The 1924 report, page 2, indicates thirty-one resignations, with sixty-seven commissions issued to recent graduates, who not only had no hospital training, but no practice in civil life

*Read before the Dinwiddie County (Va.) Medical Society.

as well. These young physicians must be trained in naval hospitals at government expense, which includes assured incomes, no competition, free equipment, health statistics inadequately discussed publicly, with practically a voiceless clientele, promotion that is probably too much based on written examinations, insufficient contact with senior officers at the bedside—occupied with matters which could be cared for by business men—and, lastly, but not least, diagnoses resulting from superficial examinations, backed by military rank.

I can establish specifically, and at great length, that such a system, is harmful, and not conducive to the best interests of the public. In my opinion, its natural tendency is to destroy initiative, self-reliance and individual courage, the great qualities of American citizenship. It is wasteful, extravagant, and demoralizing. I sat on one general court martial three days to listen how a sailor made whiskey on a destroyer. Shouldering the rifle should be backed by a system calculated to elevate moral courage, as well as physical endurance. For the year 1925, 135 of our patients deserted. There is a reason why the sailor will run away, forfeit free medical attention, the pay roll, take the chance of losing his life incident to fatigue and exposure, to consult his home physician, and if apprehended or he returns otherwise, to face a court martial and be imprisoned.

The annual report for 1921, page 42, says, "There has been handled a number of imbeciles, several of quite a low grade of intelligence, and some morons, most of whom came to the attention of medical officers through the difficulties they got into either through their inability to perform their duties or through infractions of discipline which resulted in their becoming general court martial prisoners."

This is a mere sample of conditions which necessitate frequent change in personnel, and, if not removed, our sign boards along the road side will continue to concern the nation's welfare.

The following statistics, which results from our "System," speak for themselves: From 1920 to 1925, inclusive, 717,153 applied at recruiting stations; we selected 237,923, thus entering an opinion of mental, physical, and moral eligibility, with the assurance of elevating these qualifications. These, including reenlistments, constituted Our First Line of Defense during said period. Including repeaters, 617,852 patients were admitted to the sick list, remaining unfit for duty an aggregate of 12,604,220 days. If not guilty of misconduct, they earned pay. 33,150 were invalided back to civil life, with morbidity, mortality, and pensions unknown. 60,764 surgical operations have been performed. Cost of medical supplies, $6,627,119.14. Maintenance of naval hospitals, $18,649,792.04. Cost of sickness aboard ship and at naval stations, unknown. 4,839 died, either the result of disease or casualty.

The foregoing simply represent separations, account of illness, or disability. The number of separations due to courts martial, undesirables, misfits, desertions, under age, fraudulent enlistments, inaptitudes, etc., is unknown. *The loss of fourteen souls on the Shenandoah has stirred the nation, and yet these vital and financial statistics appear to give little concern, although they affect the nation's safety.*

At the annual physical examination of commissioned officers, numbering 8,922 for 1924, it was shown that 1,127 physical defects were in evidence, which was criticized by three of our able and interested officers as being of a perfunctory character, which remark seemed justified in the premises, as one year later, with the same officers, the 1925 physical examination recorded physical defects amounting to 7,295. The Surgeon General has designated 1,103 of these disabilities as "grave," and continues "the number of defects found and recorded at the 1925 examination was greatly in excess of the number found the year before. This was to be expected and is simply an indication of the greater thoroughness with which the examination was conducted under the new system adopted in 1925, rather than a sign that more defects existed in that year." In the 6th chapter of my first book, "The Price of A Sailor's Life?" written five years ago, I pointed at length that our examinations were not thorough, to say the least, but from the reactions which followed verbal criticism, I did not deem it expedient to submit my written survey. The disabilities existing in our commissioned officers is a very serious matter, and one which should be known to the people, in order that they may be given the most expert care. In 1925, we placed seventy-two officers on the retired list *not for age but for physical disability;* seventeen resulted from tuberculosis—they will draw pay for the rest of their

lives. This means that we must issue seventy-two more commissions. Diplomas issued at Annapolis have been estimated at $20,000 each. Make your own calculations. While it is true that some of the disabilities are not serious at this time, it requires excellent skill in such instances to prevent serious consequences, which is real preventive medicine.

Officers in charge of business institutions can adapt themselves, but a naval officer representing an integral part of a fighting machine must not only be physically fit for national emergency in the event of an engagement, but the direction of manoeuvres in peace time, preparatory to war, is also of moment. In the summer of 1921 I saw the first air plane which flew over the Island of Guam. Very soon thereafter, the officer who operated the plane had a fainting spell. A board consisting of three medical officers ascertained that heart trouble existed, and the patient was surveyed to the States. Thirty-seven officers on the active list have organic heart disease, while 717 are suffering with rapid action of the heart (tachycardia); the Surgeon General regards 247 as "grave." Under the excitement of battle in my opinion, this might figure in the *decision* as to victory, as much so as the velocity of the projectile. And *not* to disclose such things to the American people would be unjust, considering that the Liberty Motor, which throbs in the breast of the air plane, has been so completely exploited.

I came through the Panama Canal on the U. S. S. Argonne in September, 1922, with an admiral on the retired list. "I was paralyzed on my flagship," said he, "the medical board who examined me didn't take my blood pressure," he complained. Isn't it pertinent to inquire, what would have occurred had the admiral been in the midst of an engagement, directing his fleet? One of our captains on the active list, only fifty-two years old, died of high blood pressure December 5, 1925, in a civil hospital under the care of a civilian physician. He was actively engaged in submarine work up to two weeks before death, according to the Associated Press. 731 officers on the active list have either high, moderately high, or low blood pressure. The Surgeon General regards 226 as "grave." 133 officers have either albumin, casts, or sugar; the Surgeon General says that thirty-two are "grave." 1,640 are over-weight, 420 are reckoned as "grave." 731 have defective vision, 535 have defective hearing, 702 possess defective teeth, and yet this is an incomplete account of the 7,295 disabilities.

Adequate discussion of this very important situation would require a volume, if approached from necessary angles,—retirements, hospitalization, appropriate command. Example: all of us know what abscessed teeth lead to, and the wisdom of normal sight incident to target practice. For the entire personnel, within a half decade, resulting from *manifest conditions*, not due to an annual examination, there has been a total of 184,707 cases of gingivitis, abscessed teeth, pyorrhoea, diseased jaw bones, and diseased root canals. The necessity for dental hygiene in sleeping quarters aboard ship, from the viewpoint of dissemination, does not require comment. The Surgeon General recites in his annual report for 1924, "one of the urgent needs of the medical department is an increase in the personnel of the Dental Corps." With such revelations due to complete examination in our commissioned officers who only represent about one-eleventh of the entire personnel, what would happen if the enlisted man were overhauled and tabulated, which I feel is his due? The only way we will ever have a fighting machine, representative of the nation, is to determine disease or disability in its incipient stage, and return the subject to civil life, where he is adaptable. The duties of our machine are prescribed and exacting.

I was much interested, and astonished, to read the criticisms from the Australian Press in Sydney, July 26, 1925. The newspaper expressed surprise that "the Navy is composed of youngsters, instead of big, broad-shouldered, deep chested sailormen." It is not my purpose to make the impression that we have not capable, interested officers; *the trouble is that their criticisms are not brought to public attention.* Two instances will suffice. There is a bill before Congress for additions to naval hospitals, costing $600,000. The Fleet Surgeon, in his 1924 report, recites, at considerable length, unnecessary sickness, and how it can be remedied, setting forth that a private corporation would not be allowed such unhygienic conditions. If this comprehensive, able report had had one-fifth the publicity reference to the "prohibition" of illness, as has been indulged in as pertains the "prohibition" of rum, our defense

would be materially strengthened, and perhaps the increase in hospitals would not be required.

Congressman Drewry and several other members of the naval affairs committee have been much interested in trying to obtain a hearing for me that health conditions might be threshed out in the open. Among other interested officers, I quote from the annual report for 1920, page 65, "the medical officer holds that more consideration might be given the personnel of the ship at the expense of technical requirements and military standards. Sailing dates and schedules could be made subsidiary to hygienic demands without detracting from the efficiency of the ship as a unit. It is true that a battleship is essentially a fighting organization, but it is also just as true that more harm can result in the immediate future from an over-crowded compartment, an incompleted ventilating job, a poor dish-washing machine system, than from the excessive consumption of fuel, barnacles on the ship's bottom, or the absence of the awe inspiring E on the turret or stack." The 1924 report, page 64 has this to say, "the U. S. S. Maryland, upon going South from New York to join the fleet, was made to carry approximately 1,000 men in addition to her complement. As a result, respiratory diseases spread rapidly. Over-taxation of bathing, berthing, feeding, laundry, and toilet facilities caused discomfort and unnecessary exposure to sickness." It is not difficult for me to understand why we have had 621,898 days on the sick list for tuberculosis within six years, which ought to cause concern. During the same period, 790 skulls have been chiseled open for mastoiditis.

Reckoning a selected personnel, present day preventive medicine, cost of maintenance, operating under military authority, and considering that the span of life has advanced ten years—our objective being the nation's safety,—civil health statistics are not only incomparable, but sickness to much extent should be well nigh nil. Desirous of avoiding prejudice, I have pointed principally to the official record, besides, criticisms to a very limited degree, considering the magnitude and importance of the subject under discussion, which cannot be adequately covered in such a brief.

A few recommendations as to the remedy:

I am of the opinion that sickness is sickness in any organization, and in the last analysis, we should hue to the line, and approach the most successful method employed in civil life, as far as is practicable.

Due to stress of war, the transportation and care of the sick cannot be normal, but this paper is not designed for what shall obtain in national emergency, but preparedness incident thereto. Among community interests, none is more important than public health, and among community liabilities none more serious than preventable sickness. Great Britain estimates that two billions of dollars are lost annually because of preventable illness, which has caused such concern that a crusade has been started, —account of Sir Arbuthnot Lane. The community welfare is definitely dependent on man's productivity, and this in turn is invariably influenced by the state of his health. If the community is to prosper, maintain high social, economic and intellectual standards, and otherwise meet its responsibilities, it must include among its major activities measures for the preservation of health and the prevention of disease. The principle has been accepted by the more progressive urban communities, and is rapidly gaining acceptance in rural communities.

Experience, moreover, is teaching the wisdom of employing competent professionally trained personnel, of paying reasonable compensation, and of making tenure secure when it is merited. It is teaching also that an adequate expenditure in this field, wisely administered, will yield large returns. The annual report for 1923 says "*making such recommendations as are regarded necessary concerning the prevention of disease, improvement of health, and increase of comfort and welfare of the personnel. In order to decrease desertion, the Navy must increase contentment. Contact with and the obtaining of germane information from the civilian medical profession.*"—Pages 94 and 97.

The Surgeon General recites in his 1925 report "it has become clear in recent years that the young physician, although he may be graduated from a class A school and an approved hospital, is by no means then equipped for service of the kind required of him in the Navy." Seventeen medical officers resigned in 1925. Military rank, in my judgment, belongs on the drill field, and in our hands should be limited to the enforcement of hygiene.

Rank is bound to carry with it a certain amount of tension and precision, which is psychologically out of kelter in the sick chamber, as the patient is not on a duty status, but is physically, and probably mentally, below normal. If 165,000 civilian doctors without military rank can command respect from their patients, *desertionless*, the experiment is worth a try-out with medical officers, who are noncombatants. The abuse of "rank" in the hands of certain medical officers, is dealt with at length, in my second book, "Three Years Under the Hammer." (25 chapters). If we had business men to care for business matters at naval hospitals, as is done in civil hospitals, the medical officer could devote his entire time to the sick. Admiral Sims writes me, "military medical corps, in the very nature of the circumstances, cannot ever be as efficient as experts in constant civil practice. But perhaps some scheme could be devised to give the military services the benefit of the skill of the latter in all cases where available."

In order to have a representative national defense, we must have American man power, which depends primarily upon selection and preventive medicine; secondly, skilful care of our defenders who incur unavoidable illness, and this is just as important as perfected ordnance. Disabled officers or sick sailors are not only unable to defend themselves, but the flag; besides, they cripple that part of our machine, relatively, which is fit to fight, and when separated, become a burden to civil life and the pension roll.

Does this matter concern Virginians? It should, for I estimate that at least 3,000 of our sailors and marines represent this commonwealth in Our First Line of Defense.

In conclusion, I am of the opinion that the Surgeon General's annual report should be adequately discussed before Congress, and liberally at civil medical societies, with the view of horse sense, American adjustments, in the interest of the American Navy, with special reference to "*contact with and the obtaining of germane information from the civilian medical profession.*"

3014 *West Grace Street.*

Following the reading of this paper, the Society passed the following resolution:

Resolved, That we, the members of the Dinwiddie County Medical Society, endorse the efforts expressed by Dr. W. A. Gills, in his paper, "Health in Relation to National Defense," as read by Dr. Gills before this Society.

Signed:

George S. Fultz, *President.*
W. C. Powell, *Secretary.*

Proceedings of Societies

The Southwestern Virginia Medical Society

Held its regular semi-annual meeting in Roanoke, March 30 and 31, the usual subscription banquet being held the first evening at the Patrick Henry Hotel. At the session which followed, papers were read by invited guests—Dr. Louis H. Clerf, of Philadelphia, and Dr. Joseph C. Bloodgood, of Baltimore. The following day, the sessions were held at the Elk's Club, the first paper presented being by Dr. O. H. Perry Pepper, invited guest, of Philadelphia. A number of interesting voluntary papers were read by members during the morning session. Between this and the afternoon session, at which a symposium on "Appendicitis" was presented, the members and guests were entertained at luncheon by the Roanoke Academy of Medicine and an automobile ride to Mill Mountain.

This was pronounced one of the best attended and most interesting meetings in the history of the Society and a number of new members were received. It was voted that a new charter be secured from the State Society to include several additional counties and to hold the next meeting at Blacksburg in September.

Dr. J. M. Miller, Wytheville, is president, and Dr. E. G. Gill, Roanoke, secretary.

Princess Anne County Medical Society.

Several of the Princess Anne County doctors met at Virginia Beach, on April the 14th, and decided to reorganize their county society. This society received a charter from the Medical Society of Virginia in 1914, but, due to inactivity, the charter had been misplaced and a new charter from the State Society was requested. Meetings will be held on first Mondays monthly at Seaside Cottage Sanitarium at Virginia Beach. Dr. R. E. Whitehead, Norfolk, R. F. D. 5, was elected president, Dr. H. F. Dormire, Virginia Beach, vice-president, and Dr. Cora Z. Corpening, Virginia Beach, secretary-treasurer.

The Central District (Va.) Medical Society

Was organized at Farmville, Va., on April 16th, by about thirty doctors representing the

counties of Prince Edward, Amelia, Nottoway, Lunenburg, Charlotte, Appomattox, Buckingham, Cumberland, Powhatan, and Mecklenburg. This Society is primarily for the purpose of having good scientific programs and increasing interest in the community hospital shortly to be erected in Farmville to supply the needs of the people in the thirty-five mile radius surrounding Farmville. Not only will it not supplant the county societies as units of the State Society but it is believed that it should promote the activity of these units, as they may hold business meetings during the sessions of the district society.

Dr. P. A. Irving, Farmville, was elected president; Drs. Carter Weisiger, Cumberland, and W. R. Martin, Charlotte C. H., vice-presidents; and Dr. W. E. Smith, Farmville, secretary-treasurer. Meetings will be held bimonthly, in Farmville.

Charlotte County Medical Society.

Charlotte County doctors meeting in Farmville, Va., on April 16th, at the organization meeting of the Central District Medical Society, decided to reorganize their county society, which had become inactive, and applied for a charter from the State Society. Dr. C. W. Tucker, Drakes Branch, was elected president; Dr. R. A. Moore, Phenix, vice-president; and Dr. W. R. Martin, Charlotte C. H., secretary.

The Cumberland County Medical Society

Was organized by the doctors from that county when they attended the organization meeting of Central District Medical Society in Farmville, Va., April 16th. Dr. Carter Weisiger, Cumberland, was elected president, and Dr. Nash P. Snead, Cartersville, secretary-treasurer. This Society has asked for a charter from the Medical Society of Virginia.

The Warren-Rappahannock-Page County Medical Society

Held its regular meeting in Front Royal, Va., April 13th, Dr. L. F. Hansbrough, of that place presiding. Dr. Giles Cook, also of Front Royal, is secretary. Interesting papers were presented by Dr. E. C. Stuart, and Walter Cox, of Winchester, and Drs. W. J. Mallory and Virginius Dabney, of Washington, D. C.

Medical Woman's Club of Virginia.

The women physicians of Richmond who are members of the Medical Society of Virginia held a meeting at the Woman's Club on Friday, March 26th, to discuss the advisability of the formation of some sort of association among the women physicians who are located in the State.

Dr. Emily Runyon offered her home for the organization meeting and the invitation was extended to all the women on the roster of the Medical Society of Virginia for April 5th. Eight of the eighteen so listed attended, —and letters were received from several others endorsing the movement.

It was decided that membership should be limited to women physicians who were members in good standing in the State Society, that it should function socially and sociologically and in no way duplicate or interfere with participation in the programs of the Medical Society of Virginia, and that the officers should be a president and a secretary-treasurer, the latter to be, as far as possible, a resident of the city selected for the ensuing meeting of the State Medical Society. Sufficient dues to cover stationery and postage were imposed.

Dr. Mary B. Baughman, 6419 Three Chopt Road, Richmond, was elected president, and Dr. Cora Z. Corpening, Virginia Beach, secretary-treasurer.

Dr. Corpening, forthwith, extended an invitation to all members of the organization to be her house guests at the meeting of the Medical Society of Virginia in Norfolk October 12-15.

List of Women Physicians Members of Medical Society of Virginia

Dr. Mary B. Baughman, 6419 Three Chopt Road, Richmond.
Dr. Margaret Nolting, 409 E. Main St., Richmond.
Dr. Mary E. Brydon, State Office Bldg., Richmond.
Dr. Susan A. Price, Williamsburg.
Dr. Cora Z. Corpening, Virginia Beach.
Dr. Mary E. Roche, Medical Arts Bldg., Norfolk.
Dr. Susan W. Field, Farmville.
Dr. Emily Runyon, 3011 Brook Road, Richmond.
Dr. Emily Gardner, State Office Bldg., Richmond.
Dr. Gladys Smithwick, Roanoke Hospital, Roanoke.
Dr. Mary Harley, Sweet Briar.
Dr. Rachael Weems, State Teachers' College, Harrisonburg.
Dr. India Hunt, Mayo Clinic, Rochester, Minn.
Dr. Leta J. White, Bureau of Health, Richmond.
Dr. Elizabeth C. Whitehead, "Ingleside," Norfolk, R. F. D. 2.
Dr. Etta M. Hadley-Judd, 619 Church St., Lynchburg.
Dr. Margaret Kuyk, Bellevue Park, Richmond.
Dr. Pauline Williams, Medical College of Virginia, Richmond
Dr. Lula Garst, Catawba Sanatorium.

The South Piedmont Medical Society

Held its regular semi-annual meeting in Danville, Va., April 20, the president, Dr. J. D. Hagood, of Scottsburg, in the chair. There was an attendance of fifty doctors and an in-

teresting scientific program was presented. Between the afternoon and evening sessions, the visitors were guests of the Danville Academy of Medicine at a dinner served at the Country Club.

The next meeting is to be held in South Boston, November 16, and "Diseases of Childhood" has been selected as the subject for general discussion.

New officers elected at this meeting are: President, Dr. E. Howe Miller, Danville; vice-presidents, Drs. I. C. Harrison, Danville, C. D. Barksdale, Sutherlin, W. S. Ferguson, Lynchburg, and P. F. Tucker, Milton, N. C. Dr. George A. Stover, South Boston, was re-elected secretary-treasurer.

The County Society

For Better Acquaintance.

With a view to arousing greater interest in THE COUNTY SOCIETY, we hope every Virginia doctor will read this column.

Any inquiries should be addressed to the Medical Society of Virginia, 104½ West Grace Street, Richmond.

As far as possible, every county in the State should have a county medical society.

Any county containing as many as three eligible medical men may organize and apply for a charter from the State Society.

Only one component society shall be chartered in any county.

County societies which have become inactive should reorganize. Your Councilor, the President, or Secretary of the State Society, will attend your reorganization meeting, if requested to do so.

The following extract on COMPONENT COUNTY SOCIETIES, from the report of Dr. Olin West, secretary of the American Medical Association, at its Dallas meeting, is most timely:

"The county medical society is the fundamental unit in our scheme of organization. More than that, it is the essential factor in the record, whether of progress or otherwise, that may be made by medical organization as a whole. A constituent state association cannot permanently succeed, no matter how its own separate machinery may be developed, unless its component county societies are meeting their own responsibilities with reasonable efficiency. No more can the American Medical Association fully succeed unless its basic units are efficient. There are those things that must be done, and done well, by the county society for itself and for organized medicine as a whole. In building up the state association or the American Medical Association, great care should be taken to see to it that nothing is done to weaken the county society, whether by taking over the work it should do for itself or by any other method.

"As has been stated in reports heretofore submitted, there are, as is clearly shown by official reports from their own officers, too many county societies that are stagnant. In many instances persistent effort has been made to stimulate them into action without any measurable success. It might be worth while for the state associations to undertake a careful survey, each within its own jurisdiction, with a view to making a final effort toward bringing every chartered component unit as now constituted into useful activity, or, failing that, to effect organization anew by the combination of two or more counties into one society. This plan has already been tried to good advantage in some instances.

"Turning to a brighter side of the general picture, it is extremely gratifying to report that many county societies in all sections of the country are doing more and better work than ever before. Among these are some with relatively small membership. Their programs of work, scientific and otherwise, are prepared with care and carried out with inspiring enthusiasm. Such societies confer real benefits on their members and exert a most helpful influence in their own several communities. They are the strength of medical organization in the United States."

Womans Auxiliary

Medical Society of Virginia

At the request of the officers of the Auxiliary, this space has been set aside for communications from them regarding matters of interest both to the profession, and the women members of their families. All communications should be addressed to Mrs. E. F. Truitt, Secretary, Westover Avenue, Norfolk, Virginia.

Advantages of Organized Effort Among the Women.

The chief object of the National Auxiliary is to see to the organization of State Auxiliaries in each state of the union. This work is extending rapidly.

The State Auxiliary in turn is responsible for the formation of a local auxiliary in each community where a local Medical Society is

in existence; such local Auxiliary being formed with the consent of the local Medical Society, working under its guidance, and in full co-operation with its officers and committees.

If the doctors of Virginia did but realize what a tremendous aid the local auxiliaries would be to them, they would urge their wives, mothers, sisters and daughters to organize speedily.

How can they help the profession?

In creating and guiding public sentiment along the right lines in all matters pertaining to the physical welfare of the community and the individual.

In taking a positive stand in reference to uneducated irregulars, who so often through various methods get the backing of the ministers and organizations.

In taking the lead in various community health and uplift movements.

In extending the circulation of *Hygeia*, especially to schools, libraries and reading rooms.

In bringing the members of the profession closer together, creating a better feeling, and increasing the effectiveness of their organizations.

In providing entertainments at the various gatherings of doctors.

In these and in many other ways the women, by organizing, can be helpful to the profession and the public.

The State Auxiliary would urgently request individual doctors who read this statement to bring it at once to the attention of the women members of their families, and request them to take part in organizing local Auxiliaries throughout the State.

Alice Leigh
(Mrs. Southgate Leigh),
President, Woman's Auxiliary, M. S. V.

The Truth About Medicine

In addition to the articles enumerated in our letter of February 27, 1926, the following have been accepted:

Cutter Laboratories
Typhoid-Paratyphoid Prophylactic
Efficiency Products Co.
Hoffman's Non-Nutritive Nut Flour
Mead Johnson & Co.
Mead's Powdered Lactic Acid Milk (Cultured)
Mead's Powdered Lactic Acid Milk (Acidified With Lactic Acid U. S. P.)
H. K. Mulford Co.
Carbon Tetrachloride—Mulford
Capsules Carbon Tetrachloride—Mulford, 0.3 c.c.
Capsules Carbon Tetrachloride—Mulford, 1 c.c.
Capsules Carbon Tetrachloride—Mulford, 3 c.c.
Parke, Davis & Co.
Parke, Davis & Co.'s Standardized Cod Liver Oil
Squibb & Sons
Scarlet Fever Streptococcus Antitoxin—Squibb for the Blanching Test, 1 c.c. vials
Swan-Myers Co.
Concentrated Pollen Extracts—Swan-Myers, 2 c.c. vials; capillary tubes.

Change of Agency

Cryogenine, formerly distributed by A. Luniere Laboratories, is now distributed by the Gallia Laboratories, Inc. The Council has continued the acceptance of Cryogenine under the new distributor.

NEW AND NON-OFFICIAL REMEDIES

Hoffman's Non-Nutritive Nut Flour.—A preparation prepared from Tagua palm nuts, composed chiefly of unassimilable carbohydrates (mannans). This product is used as a means of filling out restricted diets. It is a non-nutritive food substance used to give bulk to foods thus serving to satisfy hunger without furnishing nourishment. Efficiency Products Co., Somerville, N. J. (Jour. A. M. A., March 20, 1926, p. 842.)

Carbon Tetrachloride—Mulford.—A brand of carbon tetrachloride—U. S. P. It is marketed in the form of capsules containing, respectively, 0.3 c.c., 1 c.c. and 3 c.c. H. K. Mulford, Co., Philadelphia. (Jour. A. M. A., March 20, 1926, p. 842.)

Ragweed Combined Pollen Antigen—Lederle.—For a description of the method of preparation and the form of marketing, see New and Non-Official Remedies, 1925, p. 287. Lederle Antitoxin Laboratories, New York. (Jour. A. M. A., March 20, 1926, p. 842.)

PROPAGANDA FOR REFORM

Kirkpatrick Pul-Bro-Tu.—This is a quack consumption cure exploited by one George Kirkpatrick, of Portland, Oregon. The nostrum was analyzed in the A. M. A. Chemical Laboratory and found to be for all practical purposes merely a weak solution of potassium iodide and solution of potassium arsenite (Fowler's solution). Pul-Bro-Tu has not the slightest value as a cure for tuberculosis: on the contrary the product itself may easily do harm while he who relies on it is virtually committing suicide. (Jour. A. M. A., March 6, 1926, p. 708.)

Report of the Council on Pharmacy and Chemistry.—During the past year, the Council has carried forward its work of informing the medical profession in regard to proprietary medicines which physicians are importuned to use. The work of this body of trained men who labor untiringly and without remuneration in the cause of rational and scientific medicine deserves wider recognition and acceptance. It will receive this when physicians recognize more generally the fact that those who compose the Council have the needed specialized training to enable them, better than the average physician, to form a correct estimate of the many new medicaments appearing each year. The Council publishes the annual New and Nonofficial Remedies which describes the medicinal preparations that are acceptable to the Council. Products not accepted are reported on in the annual reports of the Council and these reports are collected in the Propaganda for Reform in Proprietary Medicines. In addition the Council publishes the Epitome of the U. S. Pharmacopeia and National Formulary and the book Useful Drugs.

While the Council has brought about a revolution in the field of therapeutics, much remains to be done. The success of the further endeavors of the

Council will depend largely on the support which is given by the rank and file of the medical profession. Support can be most efficiently given by physicians and with full justice to themselves and their patients by confining their use of proprietary medicines to those which have been found acceptable for inclusion in New and Non-Official Remedies (Jour. A. M. A., March 20, 1926, p. 850).

Report of the Therapeutic Research Committee of the Council on Pharmacy and Chemistry.—During the past year the Committee has concentrated its work on the support of investigations carried out in schools and laboratories of recognized standing by supporting investigations for which small grants were needed to purchase material and apparatus. Fourteen eligible problems of high quality were submitted.

The Committee appropriated two thousand three hundred and seventy-five dollars. Six papers were published during the year and a number are almost ready for publication. (Jour. A. M. A., March 20, 1926, p. 851.)

Report of the A. M. A. Chemical Laboratory.—During the year, the Laboratory has been engaged largely in evaluating synthetics and drug preparations for the Council on Pharmacy and Chemistry and in analyzing nostrums for the Bureau of Investigation. The work which the laboratory does for the Council on Pharmacy and Chemistry is becoming increasingly involved and difficult. Similarly the analysis of patent medicines for the Bureau of Investigation is more complicated than formerly. The Laboratory also carries out independent investigations: thus it has published a report on the quality of the market supply of cinchophen, a study of bismuth compounds and a study of liquid petrolatum-agar mixtures. The value of a chemical laboratory maintained by the American Medical Association is thoroughly demonstrated when comparisons are made between conditions existing in this and other countries. While abroad certain proprietaries are claimed to have this or that chemical structure, these claims are not made for them here when their composition has been shown to be otherwise. (Jour. A. M. A., March 20, 1926, p. 851.)

Radon (Radium Emanation).—It has been reported that the intravenous injection of long lived radioactive elements or the internal administration of radium, mesothorium or radiothorium is highly dangerous on account of the delayed harmful effects. This is due to the deposit of insoluble particles of these elements in the storage organs, namely, the bones, spleen and liver. These possible dangers apply to the administration of solutions of radium salts, but not to the ingestion of water charged with radium emanation (radon) since this is eliminated rapidly, the elimination being practically complete in the healthy individual in twenty minutes. (Jour. A. M. A., March 20, 1926, p. 893.)

The Defeat of the Streptococcus in Measles, Erysipelas and Puerperal Sepsis.—When the announcement was made that the Drs. Dick had shown that scarlet fever is a disease similar to diphtheria in that the streptococcus elaborates a toxin which is the causative agent, medical philosophers predicted that other investigators would soon reveal similar causative agents for related diseases. It appears likely that these predictions are to be realized within the current year. Now Ferry and Fisher report that they have elaborated a skin test for measles with toxin prepared from an organism found in the blood of patients suffering with this disease. Experiments are also being made with streptococci associated with erysipelas and puerperal sepsis and preliminary reports indicate the possibility of similar success.

Moreover other organisms than the streptococcus are being studied with relation to toxin production, notably the staphylococcus and more recently the tubercle bacillus. If these investigations are confirmed, it may well be that the present decade will pass into history as the one that saw the streptococcus defeated by medical science. (Jour. A. M. A., March 27, 1926, p. 955.)

Curay Light Applicators.—The source of light in a Curay lamp is an incandescent tungsten filament enclosed in a glass bulb. When used in the Curay apparatus, the lamp is operated on a higher current than its normal rating carries and therefore the life of the lamp is much reduced. The spectral energy distribution of the Curay lamp is mostly emitted in the form of heat and but a small fraction of the energy is emitted as ultraviolet rays. As compared with the quartz mercury arc lamp, the amount of ultraviolet rays emitted by the Curay lamp is insignificant.

The light of the Curay lamp is not comparable with sunlight for not only is the total amount less than that of sunlight, but a much smaller proportion of the energy is in the form of ultraviolet rays. Further the lamp has a glass bulb which strongly absorbs the ultraviolet rays given off by the filament. An exposure of the skin in actual contact with the quartz rod "applicator" supplied with the Curay lamp for one-half hour showed no ultraviolet erythema; an exposure of three and one-half minutes at a distance of one meter with a quartz mercury vapor lamp produced a marked erythema. The Curay Company supplies letters containing an account of supposed "cures" of colds and bacterial infections, but these concern uncontrolled experiments. (Jour. A. M. A., March 27, 1926, p. 971.)

The Kromayer Lamp.—According to experiments made by the manufacturer, Hanovia Manufacturing Co., the Kromayer lamp emits no radiation shorter than 2,000 angstrom units or longer than 14,000 angstrom units. Of the total radiation emitted, approximately 65 per cent falls in the ultraviolet field. The apparatus is dependable but no assertion can be made as to the properties of the rays. The company has collected the reports of results of investigations with the lamp, and supplies the references. (Jour. A. M. A., March 27, 1926, p. 972.)

Gonolin and Luesan.—These two products are manufactured by the Horovitz Biochemic Laboratories Company, New York. A. S. Horovitz, president of the Horovitz Biochemic Laboratories Company, has been referred to in connection with the asserted cancer cure "Autolysin." Later he appears to have been largely respsonsible for the "Proteogens" which the Council on Pharmacy and Chemistry declared inadmissible to New and Non-Official Remedies. Subsequently the company of which A. S. Horovitz is president, prepared a line of "Protein Substances" similar to the "Proteogens," each one being claimed to be more or less specific against a given disease or condition. The claims advanced for Gonolin and Luesan bear a striking similarity to those made for the discredited "Proteogens." (Jour. A. M. A., March 27, 1926, p. 972.)

Virginia Medical Monthly

FOUNDED BY LANDON B. EDWARDS, M. D., APRIL, 1874.
OWNED BY THE MEDICAL SOCIETY OF VIRGINIA.
PUBLISHED BY THE PUBLISHING COMMITTEE.
A. G. BROWN, Jr., M. D., Chairman, Richmond, Va.
B. R. TUCKER, M. D., Richmond, Va.
P. W. HOWLE, M. D., Richmond, Va.
E. L. KENDIG, M. D. Victoria, Va.
A. L. GRAY, M. D., Richmond, Va.
ALEX. G. BROWN, Jr., M. D., Editor.
AGNES V. EDWARDS,
Business Manager and Secretary-Treasurer.
All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal.
All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.
Subscription Price: $2.00 per annum in advance.
Single Copies 20c.

Vol. 53. MAY, 1926 No. 2

Editorial

Blood and Lymph.*

General properties of the blood and its functions may well be considered by physicians. Blood passing through the vessels performs five general functions; (1) conveyer of foodstuffs to the tissues after the food has been properly prepared by digestion; (2) a means of transportation of oxygen from the lungs to the tissues of the body; (3) a fluid route for carrying off from the tissues various waste products formed in the metabolic processes of the body cells; (4) a medium for transmission of the secretions from the glands of internal secretion; (5) an equalizer of temperature and water content of the body.

Besides performing these general functions the blood possesses certain essential characteristics. The blood contains within its several elements gases, such as oxygen, carbon dioxide and nitrogen; proteins, as fibrinogen, paraglobulin, serum albumin; non-protein nitrogen bodies, as urea, uric acid, creatine, creatinine, ammonia salts, amino acids, phosphatids; non-nitrogeneous bodies, as fats, cholesterin, lactates; inorganic salts, as chlorides, carbonates, sulphates, phosphates of sodium, potassium, calcium, magnesium and iron; enzymes and special substances as lipase, glycase, epenephrin, prothrombin, antithrombin, immune bodies, complement and opsonins, etc.

Each 1,000 parts of blood contain 810.05 of water, 189.95 parts of solids, 133.4 parts of hemoglobin, 39.68 parts of protein, 1.09 parts of sugar, 1.298 parts of cholesterin, 2.052 parts of lecithin, 0.631 parts of fats, 0.759 of fatty acids, 0.054 of phosphoric acid, as nuclein, 3.675 of Na_2O, 0.251 of K_2O, 0.641 Fe_2O_3, 0.062 of CaO, 0.052 MgO, 2.935 of Cl, 0.809 of P_2O_2, 0.576 of inorganic P_2O_2.

A circulating fluid of such complexity possessing another essential characteristic for its proper function, coagulation and clotting, is at once a commanding problem in all diseases; a review of its influences in health and disease, however circumscribed, is important to the practitioner.

The total quantity of blood in the body in man is variously estimated; about seven per cent of the body weight is blood.

The red blood corpuscle engages in the most prominent function of carrying oxygen. Five million in each c.mm. of blood, it is a bi-concave disc having a diameter of about 7.7 u. They are constructed out of a lipoid substance, in the meshes of which hemoglobin is deposited. Hemoglobin is a simple globulin and a pigment hematin containing iron. When saturated, oxygen is present in hemoglobin in proportion of two atoms of oxygen to one atom of iron. The surface area of the corpuscles of the body has been estimated to be 3,200 square meters. Such a large surface area is available for oxygen absorptions as the red blood cells pass in single file through the capillaries of the lungs absorbing oxygen from the aveolar air. One may readily appreciate the extreme importance of hemoglobin in red cells, as these facts of physiology are considered.

The functions of the leucocytes are numerous. The ameboid movement of the cells gives the title of "wandering cells" as they migrate through the walls of capillaries into the surrounding tissue. While this is a normal process, under certain pathologic conditions this property is greatly increased. Leucocytes of the blood protect the body from pathologic bacteria by ingesting them which, according to Wright, depends upon the plasma of certain substances called opsonins. Leucocytes exert a part in the process of absorption and growth and in promoting regeneration and repair in the body. Leucocytes aid in the absorption from the intestines, they do a part in blood coagulation, they help in promoting a normal

*Reference, Howell and MacLeod (Physiology).

composition of the blood plasma in proteins.

Lymph is blood plasma. It is a plasma of the blood which has made its way through the thin walls of the capillaries; it bathes the tissue cells, bringing to these cells nourishment and removing from the cells the wastes of metabolism. Plasma of the blood is lymph in the making and it accumulates in the tissues under some pressure. It is removed, ladened with the waste materials, by the freely distributed lymphatic vessels. Lymph is tissue fluid; coming in it is filled with nutrition, going out it is filled with the wastes of cell life. The equation of fluids is maintained by chemical balances. By filtration, osmosis, and diffusion, there may be an interchange between blood plasma and tissue fluid, and between the tissue fluid and the fluid of the lymphatics. In this general way the fluid balances of the body blood and lymph courses of the body, and the great labyrinth of cell and intracellular spaces are carried on. On this depends life; on this depends cell life; on this depends detoxication of the body.

Physiologists have not yet reached a satisfactory explanation of these essential phenomena. One may, for the purpose of this comment, say that the filtration through the endothelial cells by osmosis and diffusion, the flow of the water from one place to another throughout the body is influenced by the difference of concentration of the dissolved substances contained therein. These forces control the amount and composition of the lymph.

Howell says, "it is evident that changes in the capillary pressure, however produced, may alter the flow of the lymph from the blood vessels to the tissues by increasing or decreasing the amount of filtration; changes in the composition of the blood, such as follow periods of digestion, will cause diffusion and osmotic streams tending to equalize the composition of the blood and lymph; and changes in the tissues themselves following upon physiological and pathological activity will also disturb the equilibrium of composition, and therefore, set up diffusion and osmotic currents."

"Blood Letting."

This is a therapeutic measure of ancient origin. Of beneficial effect in certain cases, the habit of indiscriminate use of it became widespread and a useful measure became a menace. No doubt, now, as formerly, venesection has its proper place in therapeutics. This measure today, with dramatic promptness, may bring striking relief in certain diseased states. With its power for good as well as its serious possibilities of harm, blood letting should be resorted to only when clearly useful. There are a number of factors to be considered when symptoms indicate a possible need for blood letting. The acuteness and intensity of the toxemia, the state of the heart and blood pressure, the quantity and nature of the blood itself, and the general status of the patient in weight and health, all, enter into the solution of the question whether or not venesection is indicated. A. G. B., JR.

Transfusion.

Children seem always to be giving us questions to answer. In going into these questions it seems we follow their line of reasoning closely. For the questions which we are attempting to answer, whether we realize we have asked them or not, are: "What is it?" "How do you work it?" "What can you do with it?"

Regardless of how tiresome it may seem to repeat definitions, were it possible to carry at all times a clear, comprehensive, intelligent general definition of the subject we are discussing, working with or attempting to apply our discussions, work and applications would be much simpler, more direct and productive. For such definitions a system of mnemonics is often necessary and word analysis and derivation furnish the best. In the present case splitting our words gives us *trans* which is a Latin preposition meaning "across" and fusion which is from the Latin verb *fundere*, meaning "to pour." Then by blood transfusion we mean pouring across of blood from one individual to another, generally though not necessarily of the same species or kind. As to the second question "How do you work it?" The detail will be taken up separately and the methods gone over and into. Briefly and generally, transfusion consists of the vessel-to-vessel passage of blood, but we generally consider with this the indirect methods of conveying the blood, which are properly withdrawal and infusions, and all are considered under the general term *blood transfusion.*

The third question "What can you do with

it?" immediately begins to be answered in generalities when we ponder the definition. Blood is a liquid body tissue and under what conditions would it be poured across from one to another except when the patient manifests some blood abnormality and it has become necessary to overcome this abnormality, replacing the lacking tissue or modifying that present so as to bring it back to normalcy?

There are many contenders that blood transfusion, except to increase blood volume, has been a failure, but all seem agreed that for the replacing of hemorrhaged or leaked blood it is specific if used early before the tissues have had time to undergo degenerative changes between the blood's loss and the transfusion.

However, were this the only use, we might employ some more convenient fluid, such as saline or Ringer's solution or some of the gelatin preparations which might be "carried in stock." At times we find blood transfusion valuable in replacing almost any constituent of the blood except, perhaps, the leukocytes. And there are times when the stimulating effect of the new blood upon the bone marrow makes it worth while.

When it is used to restore all the elements, the actual volume of the blood and the hemoglobin and red cells are our main consideration. In these cases we know of no satisfactory substitute although volume in itself may be maintained at a fair level for several hours by introducing physiological salt solution which soon passes out of the body. The use of gelatin and gum acacia seems practically entirely abandoned for, while it has the advantage of maintaining blood volume for a longer period, there is grave danger of having tetanus bacilli present unless sterilized under pressure.

A consideration frequently coming up in these cases is the possibility of completely restoring the hemoglobin and red cells. The normal restoration of corpuscles seems a rather slow process and complete restoration passively seems to have a depressing effect on the blood forming organs and is not so desirable as a less massive dose.

Transfusion has a much wider field in secondary anemias, blood dyscrasias, pernicious anemias, cholemias, toxemia, sepsis, septicemia, hemophilia and purpura hemorrhagica.

In Acute Blood Loss transfusion is indicated where there is a known loss of 2,000 c.c. of blood or where there is a falling systolic pressure in the presence of hemorrhage or there is a fall to 90 mm. systolic pressure and the pressure remains there, in conjunction with the pulse rate and volume and the general appearance of the patient.

In Secondary Anemias the prime factor is to stop the blood loss and when this has been done restoration of the blood will follow gradually, but where this loss has extended over sometime transfusion exerts a stimulating effect on the hematopoietic viscera. But in case the hemoglobin has reached approximately 30 per cent. transfusion ceases to be optional and becomes a necessity.

In Pernicious Anemia transfusion is not curative and there is some doubt as to its producing change in the essential course of the disease but it undoubtedly much improves the general condition and, probably beside adding comfort, prolongs life. The early cases are benefited most and the continuance of the treatment depends upon the apparent benefit derived, for it seems after a time that repetition produces less to no beneficial effect. But it does appear that transfusion is the one therapeutic measure which produces most benefit. At opportune time one or two transfusions seem of benefit in each case of pernicious anemia.

In Cholemia transfusion exerts a valuable effect on the coagulation qualities in the blood and is a valuable preoperative treatment, lessening possibilities of hemorrhage.

In Toxemias, Sepsis and Septicemia where the individual is weakened and emaciated and where the resistance seems strong enough to balance against the invading powers of the attacking organism but not to overcome it, transfusion of new blood into the organism is often enough in favor of the patient to throw the balance toward the patient and prove a life saving procedure. This is especially true in cases of infected compound fractures and prolonged and extensive suppurative processes. In these cases and in cases of severe and persistent furunculosis, if time permits, the donor's resistance should be built up by a course of vaccines made from the offending organism.

In Hemophilia and Hemorrhagica Purpura there seems a deficiency in the blood platelets and we know of no way to supply these except by transfusion even though it

may, at times, be necessary to bleed the patient before giving the transfusion, in order not to increase the red cells and hemoglobin above the normal point.

The dose of blood to be given, except in pernicious anemia and for replacement of blood recently hemorrhaged, is a matter of discussion but in both pernicious anemia and massive hemorrhage the dose should be from 500 c.c. to 1,000 c.c. But in cases where there is need of stimulating effect, as in anemias, sepsis, toxemias, etc., a dose of from 250 c.c. to 400 c.c. seems to be a choice since there is definite stimulating effect to the blood building organs and there is no depression from an over dose of "passive" hemoglobin.

There must be considered, too, in these cases a certain element of danger to the recipient. These are principally introduction of air into the vessels, acute dilatation of the heart from too sudden introduction of the increased blood volume, transmission of infection and agglutination or hemolysis of the introduced corpuscles.

Should tingling pains over the body, a fullness in the head, oppression in the region of the precordium or excruciating lumbar pain develop in the recipient, it is imperative to discontinue the procedure.

Briefly then, we may conclude that in a branch of practice transfusions offer benefit to patients who suffer of recent and considerable hemorrhage, secondary anemias, blood dyscrasias, pernicious anemia, toxemias, cholemia, sepsis, septicemia, hemophilia and hemorrhagica purpura. J. O. F., JR.

News Notes

Norfolk Meeting, Medical Society of Virginia.

Norfolk doctors are already at work, preparing for a big meeting of the State Society, October 12-15. Dr. W. L. Harris, of that city, is president. Dr. R. Lloyd Williams has again had thrust upon him the chairmanship of the Local Committee on Arrangements, so every doctor who has attended Norfolk meetings when Dr. Williams was chairman, knows that a good time is in store.

The Program Committee has selected "The Liver" as the subject for general discussion and will have this discussed by Dr. F. C. Mann, invited guest, from the Mayo Clinic, Rochester, Minn., and Drs. W. B. Martin, Norfolk, Fred M. Hodges, Richmond, J. C. Flippin, University, and H. H. Trout, Roanoke.

Other good things will be in store for our members this year, so begin making your plans now to help make this one of the biggest and best meetings in the history of our organization.

American Medical Association.

The seventy-seventh annual meeting of the Association, held in Dallas, Texas, was the largest medical meeting ever held in the South. Dr. William D. Haggard, Nashville, Tenn., presided. The Medical Society of Virginia was represented in the House of Delegates by Drs. Southgate Leigh, Norfolk, and S. S. Gale, Roanoke.

Washington, D. C., was selected as the 1927 place of meeting and the following are officers for that meeting: President, Dr. Wendell C. Phillips, New York; president-elect, Dr. Jabez N. Jackson, of Kansas City, Mo.; vice-president-elect, Dr. John O. McReynolds, of Dallas, Texas. Dr. Olin West, Chicago, is secretary-manager.

The Virginia Society of Oto-Laryngology and Ophthalmology

Held its annual meeting in Petersburg, April 27th, Dr. H. S. Hedges, of Charlottesville, presiding, and Dr. E. U. Wallerstein, Richmond, at the secretary's desk. There was an attendance of sixty doctors from all sections of the State—the largest meeting in point of attendance of any yet held and twelve new members were received.

It was decided to hold the next meeting in Charlottesville. Dr. C. M. Miller, Richmond, was elected president; Dr. C. S. Dodd, Petersburg, vice-president; and Dr. Fletcher D. Woodward, Charlottesville, secretary-treasurer. Dr. H. S. Hedges, retiring president, automatically became a member of the council.

Whereabouts of Some Virginia Graduates.

The following Virginia doctors are now reported at Mayo Foundation, Rochester, Minn.: Drs. I. L. Harshbarger, M. P. Omohundro, H. H. Hurt, and C. B. Morton, as fellows in surgery, and Drs. L. M. Blackford, B. T. Horton and India Hunt in medicine. Dr. Horton has recently returned there after a sick leave, and Dr. Omohundro had to go home on ac-

count of a Pott's fracture as the result of an accident.

Dr. John Staige Davis, Jr., is at St. Lukes' Hospital, New York City.

Virginia graduates now at the Massachusetts General Hospital, Boston, are Drs. Robert B. Hiden, T. Duckett Jones, John S. Lawrence, Staige Davis Blackford, and John T. Bate.

Dr. A. S. Vaiden,

Of Monterey, Va., had a disagreeable experience recently, when he was attacked by a vicious dog when answering a call at the home of a patient. He was taken off his guard owing to the presence of the owner of the dog.

The Medical Society of the State of North Carolina

Will hold its annual meeting at Wrightsville Beach, June 15-17, inclusive. Dr. Wm. deB. MacNider, Chapel Hill, is president, and Dr. L. B. McBrayer, Southern Pines, secretary.

The Association of Surgeons of the Southern Railway System

Will have its annual meeting at the Willard Hotel, Washington, D. C., May 25, 26 and 27, under the presidency of Dr. N. H. Taylor, of New Market, Tenn.

Memorial to Dr. Virginius Harrison.

A monument to the memory of Dr. Virginius Harrison, Richmond, who died about a year ago, has just been erected at his grave in Hollywood Cemetery by his patients and friends and his plot has been put in perpetual care. The monument bears the following inscription:

"Virginius Harrison, M. D.,
Surgeon-General United Confederate Veterans.
Born March 21, 1865
Died June 6, 1925.
Beloved physician and Christian friend.
With a love that took no thought of self, he spent his life serving others, and thus fulfilled the law of Christ. His grateful patients and friends have erected this stone as a perpetual monument to his memory."

Faculty Promotions at U. Va.

The following promotions from instructor to assistant professor, in the faculty of the Medical School of the University of Virginia, have been announced to become effective next session: Dr. Vincent W. Archer, roentgenology; Dr. Henry B. Mulholland and Dr. James Edwin Wood, internal medicine.

Old Age Diseases Cause More Deaths in Virginia.

According to a report just issued by the State Board of Health, less than 30,000 Virginians died during 1925 and more than 10,000 of these were due to the four degenerative, or old age, diseases—cancer, heart diseases, apoplexy and Bright's disease. There was an increase in the number of deaths from cancer and apoplexy in 1925 over 1924, and a decrease in deaths from Bright's and heart disease.

The West Virginia State Medical Association

Holds its annual meeting at Morgantown, May 25, 26 and 27, under the presidency of Dr. J. R. Bloss, of Huntington. Mr. Sterrett O. Neale, Charleston, is executive secretary.

Dr. S. E. Oglesby,

Of the University of Pennsylvania Medical School, class of '21, has located in Lynchburg, Va., where he is associated with Dr. F. M. Perrow, in the practice of medicine and surgery. Dr. Oglesby is a B. A. of Washington and Lee University and, following his graduation in medicine, was for three years an interne at the University of Pennsylvania Hospital in Philadelphia. His last year there was spent as post-graduate chief house surgeon in the department of gynecology under Dr. John G. Clark.

Gifts to New York University Medical College.

Gifts totalling $29,000 have been made to the New York University and Bellevue Hospital Medical College during the current year. These gifts are in the form of $10,000 for expenses of the department of surgery; $5,000 for experimental work in ophthalmology; $10,000 for studies in prevention and cure of pneumonia; and $4,000 for the study of anaphylaxis.

The South Carolina Medical Association,

At its annual meeting in Sumter, last month, elected Dr. George H. Bunch, Columbia, president, and selected Anderson as its 1927 place of meeting. Vice-presidents are Drs. William C. Black, Greenville, Charles J. Lemmon, Sumter, and William L. Pressley, Abbeville. Dr. Edgar A. Hines, Seneca, was re-elected secretary-treasurer.

First Report From Virginia Xmas Seal Sale.

Reports from some of the counties have been slow in reaching the office of the Virginia Tuberculosis Association, but those to date show that $52,814.09 has been collected in Virginia from the sale of the Xmas seals, for 1925. It is thought that, with the additional amount to come from other localities, the total

will be slightly in excess of $55,000. There are places for every bit of it to be used.

Philadelphia Society Has New Home.

The Philadelphia County Medical Society dedicated its new home in that city, April 20 and 21, with appropriate ceremonies. On the second evening, there was a housewarming, with a musical program and dancing. The building is located at 21st and Spruce Streets.

Dr. R. A. Vonderlehr,

Formerly of Richmond, Va., but now an assistant surgeon in the U. S. Public Health Service, has been transferred from the Marine Hospital at Chelsea, Boston, Mass., to U. S. Marine Hospital No. 43, Ellis Island, New York, effective May the 15th.

Porto Rico Mothers Win Recognition.

Mothers get official recognition in Porto Rico, at least in the newly created Child Welfare Board of the Island. There are five members of this board, all appointed by the Governor with the advice and consent of the Senate, and two of these must be "mothers of families." The board is to study problems affecting children, suggest changes in child welfare laws and inspect children's institutions.

Child Laborers in German Fields.

Poverty, labor shortage, higher wage demands by adults, and the large influx of school graduates into industry are blamed for the increased number of children found to be working on German farms by the National German Society for the Protection of Children. The average age at which these children began to work was ten years, but some began work at the age of four or five. The hours of work varied from two to five in winter and from two to twelve the rest of the year. In many cases working conditions were bad and the work unsuited to the strength of children.

Dr. Charles M. Caravati

Recently delivered an address on "Certain Interesting Phenomena of Self" before the Catholic Woman's Club, of Richmond.

Dr. A. R. Gray,

Recently of Bentonville, Va., is now located at Nokesville, Va.

Major Allen J. Black,

Of the Medical Corps, of the U. S. Army, has been transferred from Ft. Andrews, Mass., to Camp Devens, Mass. Major Black is a much interested member of the Medical Society of Virginia—his native State—despite the fact that his duties take him far from base.

Dr. L. C. Cox,

Recently resident physician at Stonega Hospital, Stonega, Va., is now city health officer of Kingsport, Tenn.

Dr. A. J. Crowell Honored.

Davidson College has conferred the degree of D. Sc. upon Dr. A. J. Crowell, Charlotte, N. C., prominent North Carolinian and at this time president of the Tri-State Medical Association of the Carolinas and Virginia.

Dr. Hunter Williams,

For sometime located at Red Hill, Va., advises of change of his address to North Garden, Va.

Dr. and Mrs. Charles E. Bowles,

Of Pulaski, Va., visited friends and relatives at Amherst, Va., last month.

Syracuse Druggists Abandon Sale of Specific Remedies.

The *Bulletin of the New York State Department of Health* states that a representative of the State Department of Health, working in co-operation with the Syracuse Health Demonstration under the Milbank Fund, recently visited seventy-eight druggists in Syracuse and called their attention to the harm done by dispensing so-called specific remedies for gonorrhea and syphilis. Eighty per cent of those carrying these so-called remedies agreed to abandon the sale of such drugs.

The object of this campaign is to discourage self-treatment of these diseases which so often results in harm to the patient and a sense of false security which will lead to complications of the disease and a further spread of the infection.

Dr. J. B. Catlett

Returned to his home in Staunton, Va., the latter part of April, after attending clinics in Richmond for a time.

Dr. Walter C. Klotz,

Formerly connected with Blue Ridge Sanatorium, this State, but for the past several years medical director of the National Home for Disabled Volunteer Soldiers, Johnson City, Tenn., has resigned to accept a position on the faculty of Cornell University Medical School of New York.

Hospital Devoted to Dental Surgery.

Many dentists gathered in Norfolk, on the 4th of this month, for the formal opening of

the world's first hospital devoted to dental surgery and its allied subjects. The hospital has been built in the Norfolk Navy Yard as a detached unit of the Naval General Hospital and has really been in operation for almost two years. Public announcement of the establishment of the institution has been withheld, however, over the experimental stages until it was demonstrated that the movement had met with success. Commander Paul White, U. S. N., Dental Corps, is the commanding officer.

Dr. R. H. Woolling

Has returned to Pulaski, Va., after spending sometime in New York taking a special course in X-ray work. He has been placed in charge of the X-ray work in the new hospital which was opened in Pulaski about the first of this month.

Surgeon General of the Army Re-Appointed.

Major General Merritte W. Ireland has been re-appointed by the President as surgeon general of the U. S. Army, and the appointment was confirmed by the Senate early in April.

Malaria Mosquitoes Controlled by Airplane Dusting.

Considerable success has attended the experiments of the U. S. Department of Agriculture in the use of the airplane as a means of distributing poison dust over both treeless and wooded swampy areas for the control of malaria mosquitoes. In the final tests, more than 90 per cent of the larvae in the area treated were destroyed with one application. Paris green was the larvicide used in all the experiments. Even in heavily wooded areas where the water was protected by dense overhead foliage and where the planes had to be flown high enough to clear the tallest trees, the dust was found to have penetrated the thick growth and to have reached the water in sufficient quantities to destroy the larvae. Because of the small amount of Paris green (one-twentieth of a pound to several pounds per acre) required to kill the larvae, it was mixed with an inert dust, finely ground silica earth being the carrier used in most cases.

In each test a series of pans containing known numbers of larvae were distributed over the area to be dusted. Counting the living larvae after dusting furnished a check on the effectiveness of the application.

Dr. Nelson Mercer,

Who recently returned to private practice in Richmond, was on April 24th promoted to the rank of lieutenant colonel in the Medical Reserve Corps of the U. S. Army.

Dr. Oscar B. Hunter,

Washington, D. C., assistant dean and professor of bacteriology and pathology, George Washington University Medical School, recently delivered the Kober Foundation lecture at Georgetown University.

Dr. Beverley R. Tucker,

Richmond, was the guest of honor at the annual dinner of the Pittsburgh College of Physicians, last month, and delivered the Bedford Lecture on "The Physicians' Contribution to Literature."

Use of Toxin-Antitoxin Urged.

Last year there were reported 226 deaths from diphtheria in Virginia. Four counties, representing about one twenty-fourth of the State's population, in which toxin-antitoxin campaigns had been conducted, reported only four deaths.

As it takes about five months for toxin-antitoxin to bestow complete immunity, Dr. E. G. Williams, State Health Commissioner, urges health authorities and family physicians to see that children are immunized now, as six months from now is the usual season for diphtheria to reach its height in cases and deaths. The child vaccinated now need not fear diphtheria five or six months from now.

Dr. A. D. Ownbey,

Formerly of Newport News, Va., located in Miami, Fla., the latter part of January, with offices at 1237 S. W. Eighth Street. During his second month there, he received an appointment on the surgical staff of the city hospital in Miami.

Among Chairman for American Forestry Week.

Dr. H. S. Hedges, Charlottesville, and Dr. R. D. Tucker, Powhatan, were among the local chairman named to interest Virginians in forest conservation during American Forestry Week, this Spring.

Dr. M. H. Watson

Returned to his home in Chatham, Va., the latter part of April, after a short stay at University, Va., having gone there to accompany his wife and infant son home from the University Hospital.

Automobiles Menace Child Life.

"The automobile is as great a menace to child

life today as scarlet fever and whooping cough combined," according to statistics compiled by the Metropolitan Life Insurance Company. Deaths from automobile accidents, according to the company's figures, have increased 50 per cent since 1920, two-fifths of the deaths being among children under fifteen. In other respects 1925 is pronounced a banner year among the Metropolitan's industrial policy-holders, who constitute one-seventh of the total and one-fourth of the rural population of the United States and Canada. Big gains were made in reducing death rates from measles, scarlet fever, diphtheria and whooping cough —the four chief children's diseases. A low record was also established for diseases associated with maternity.

Civil Service Examination.

Receipt of applications for assistant statistician (public health) will close June 8. The examination is to fill vacancies in the U. S. Public Health Service in Washington, D. C., and in the field. Full information and application blanks may be obtained from the U. S. Civil Service Commission, Washington, D. C., or the secretary of the Board of U. S. Civil Service Examiners at the post-office or custom house in any city.

Every Baby a Full-Time Job.

The care of one baby is a full-time job for its mother for five hours and forty-one minutes every day, and a part-time job the rest of the twenty-four hours, according to an estimate based on the reports of a group of seventeen young mothers, collected and tabulated by the U. S. Bureau of Home Economics. The babies were under one year of age.

The Leslie Dana Medal,

For the most outstanding achievement in the prevention of blindness and the saving of sight, will be awarded this year to Miss Louisa Lee Schuyler, of New York City. This is given for her work in launching the movement for the prevention of blindness in 1908 and for her consistent active interest in this movement from its inception until she became confined to her home on account of illness several years ago. Though eighty-eight years of age and ill, Miss Schuyler still keeps in close touch with the activities of this work.

Dr. J. M. Holloway

Was elected president of the Fredericksburg (Va.) Gun Club, at its organization meeting, recently.

Dr. and Mrs. G. G. Howery,

Christiansburg, Va., were recent visitors in Wytheville, Va.

Dr. J. M. Bishop,

Of the class of '24, Medical College of Virginia, who has been company physician with the Virginia Iron, Coal and Coke Company, at Inman, Va., has moved to Appalachia, Va., and entered general practice.

Dentists Hold Joint Meeting.

The Virginia State Dental Association and the North Carolina Dental Society held a joint meeting in Richmond, the middle of April, which was well attended. At this meeting, Dr. W. M. Hodgkin, Warrenton, became president, of the Virginia Association, Dr. W. G. Delp, of Rural Retreat, was elected vice-president, and Dr. A. M. Wash, Richmond, secretary and treasurer. Virginia Beach was selected for the 1927 meeting place of the Virginia Association while the North Carolina Association decided to hold its next meeting in Greensboro.

Dr. J. B. Stone,

Richmond, had the misfortune last month to lose his automobile by fire which was caused by an explosion of gasoline in another car in a double garage.

Hospital Service in the United States.

The *Journal of the American Medical Association* for April 3rd has published an interesting report on "Hospital Service in the United States." This shows that the United States has at present a total of 6,896 hospitals of all types and kinds, with 802,065 beds, constantly caring for an average of 629,362 patients.

Figures for Virginia show that we have 106 hospitals, there being 1 bed for every 661 population. Sixty counties in the State are without hospitals for community use.

Lakeview Hospital,

Suffolk, Va., announces that Dr. W. T. Gay, junior member of its surgical staff, will take care of general surgery during the absence of Dr. J. E. Rawls, who sailed on April 27th, with the Interstate Post-Graduate Assemblies of North American Physicians, to attend clinics abroad. He will return in July.

The American Psychiatric Association

Is to hold its annual meeting in New York City, June 8 to 11 inclusive, headquarters being at the Waldorf-Astoria. The meeting promises

to be exceedingly interesting. Dr. C. Floyd Haviland, of Albany, will preside. Dr. Earl D. Bond, Philadelphia, is secretary.

The Medical Association of the Valley of Virginia

Has prepared an interesting program for its next meeting in Harrisonburg, May the 27th, under the presidency of Dr. P. W. Boyd, of Winchester. In addition to papers by the members, there will be one by Dr. Hugh H. Young, invited guest, of Baltimore. Information about the meeting may be obtained from Dr. Alex. F. Robertson, Jr., acting secretary, Staunton, Va.

School Attendance of Country Children Delaware.

Average attendance in the rural schools of Delaware has increased from 86 days per pupil to 133 days in the last six years, according to a study recently completed under the auspices of the State Bureau of Education. The investigators believe that the increase is due to the establishment of a State school system with authority centered in the board of education to supervise attendance, to special efforts of teachers, and to the general movement throughout the State for better schools. Weather, illness, parental indifference, and agricultural and other forms of work were found to be the chief causes of absence.

How to Insure a Happy Adoption.

Adoption, like marriage, should not be lightly entered upon. In "Psychoclinical Guidance in Child Adoption," just published by the Children's Bureau, Dr. Arnold Gesell, of Yale, urges all child-caring agencies, both public and private, to give every child under consideration for adoption complete mental and physical examinations, to determine so far as possible his mental and physical capacities, and to see to it that he lives with his foster parents for a probationary period before the final adoption papers are signed. Dr. Arnold Gesell's article contains the history of several typical cases brought to the Yale Psychoclinic. These illustrate the need of precautionary measures to safeguard the interests of foster parent and child alike.

Dr. Whitfield Hurt by Auto.

Dr. James M. Whitefield, city coroner of Richmond, was painfully cut about the head, and his sister who was with him narrowly escaped injury when his automobile was struck by another machine, the latter part of April.

The Gill Memorial Eye, Ear and Throat Hospital,

The private hospital of Dr. E. G. Gill, will be opened in Roanoke, Va., about the first of July. It has been especially designed and equipped for the treatment of diseases of the eye, ear, nose and throat. It has four stories, is absolutely fireproof and contains twenty rooms. Only graduate nurses will be employed. The hospital will have departments for ophthalmology, oto-laryngology, bronchoscopy and esophagoscopy, and facio-maxillary surgery. Dr. Gill will have Dr. Charles A. Young, of Roanoke, associated with him.

Dr. Allen H. Moore,

Formerly of New Market, Va., but now of Doylestown, Pa., has recently received an appointment as first assistant to Dr. I. M. Boykin, chief obstetrician at the Abington Memorial Hospital, Abington, Pa., one of the larger Philadelphia suburban hospitals. This appointment places Dr. Moore in charge of the Pre-Natal Clinic.

Million Dollar Drive on for Medical College of Virginia.

As we go to press, a drive is on to raise $1,000,000 for additional buildings and increased activities at the Medical College of Virginia. The plan is to raise $500,000 in the city of Richmond and $500,000 from the rest of the State. It is of interest to note that this college has given to Virginia more than two-fifths of its physicians, one-half of its dentists, nine-tenths of its graduate pharmacists, and a large number of nurses. Richmond alone has 249 physicians, 88 nurses, 106 pharmacists, and 85 dentists who are alumni of the Medical College of Virginia.

Dr. H. H. Ware,

Of the class of '24, Medical College of Virginia, after a time at the New York Nursery and Child's Hospital, has received an appointment as house surgeon at the New York Lying-In Hospital and entered upon his service there the first of this month.

Dr. and Mrs. Clyde F. Ridge,

Thurmond, W. Va., visited Mrs. Ridge's parents in Richmond, in April. Dr. Ridge is

a member of the class of '22, Medical College of Virginia.

Dr. George W. Schenck,

Norfolk, Va., has accepted the captaincy of Ambulance Company No. 110, succeeding Captain Albert V. Crosby, resigned.

Married.

Dr. George W. Parson, of Raven, Va., and Miss Beatrice Elizabeth Smither, of Richmond, April 24th.

The National Tuberculosis Association

Will hold its annual meeting in Washington, D. C., October 4-7, immediately following the meeting of the International Union Against Tuberculosis, which meets in the same city, September 30-October 2. Already many prominent men and women have promised to attend and address these meetings. Special arrangements will be made for interpreting foreign language papers. The sessions of the National Tuberculosis Association are open to all persons interested; those of the International Union Against Tuberculosis are open only to members.

Further information about either of these meetings may be obtained from the National Tuberculosis Association, 370 Seventh Avenue, New York City.

Dr. W. R. Cushing

Was elected chairman of the board of directors of the Bank of Dublin, Va., at a meeting of the stockholders held last month.

The American Health Congress,

In which sixteen national organizations are participating, is meeting in Atlantic City, May 17-22, under the auspices of the National Health Council. Headquarters are at the Steel Pier. There will be something to interest everybody, ample hotel accommodations, and reduced railroad rates. For other information, write at once to the National Health Council, 370 Seventh Avenue, New York City.

Dr. M. E. Hundley,

Martinsville, Va., has closed the Lucy Lester Hospital, at that place, while he is abroad attending clinics.

Dr. and Mrs. H. T. Hopewell,

Of Strasburg, Va., have returned home after a visit to Lexington, Va., where they went to visit their son, Tilden, who is at Virginia Military Institute.

Dr. C. Mason Smith

Was recently elected one of the directors of the Fredericksburg, Va., Rotary Club, for the ensuing year.

The American Board of Otolaryngology,

In addition to the examination held at Dallas on April 19th and at San Francisco on April 27th, will hold another examination at the Otolaryngological Clinic, Royal Victoria Hospital, Montreal, on Tuesday, June 1st.

Information may be secured from the secretary, Dr. H. W. Loeb, 1402 South Grand Boulevard, St. Louis, Missouri.

Virginia Specialists Attend Dinner.

At the recent annual dinner of the Society of Ex-House Surgeons of the Manhattan Eye, Ear and Throat Hospital, held at the Canadian club, Belmont Hotel, New York City, the following specialists of this section were in attendance:

Dr. Warren White, Norfolk, Va.
Dr. Meade Edmunds, Petersburg, Va.
Dr. Fletcher D. Woodward, Charlottesville, Va.
Dr. Wm. Robt. Weisiger, Richmond, Va.
Dr. John McGuire, Bluefield, W. Va.

Garvan to Finance Fight on Common Cold.

A research to discover the cause and cure for the common cold was undertaken by the American Drug Manufacturers' Association, at its convention in New York City recently, when an offer to finance such a research was made by Francis P. Garvan, president of the Chemical Foundation. Mr. Garvan stated that it is estimated that on account of the common cold, ten days of every man, woman and child's activity a year, on the average, is lost throughout this county, and this, coupled with the fact that so many ills to which flesh is heir develop from the common cold, makes it one of the greatest scourges of humanity.

Stomatalogic Number.

The July issue of *Medical Life* will be a Stomatology Number, devoted entirely to the "History of Stomatology" by Dr. A. J. Asgis, of New York. The issue will be profusely illustrated. There will also be a chapter by E. B. Hardisty on "Stomatologic Education in the United States in 1926."

Minnesota Fights Diphtheria.

Diphtheria, the child's worst enemy, is being vigorously attacked in Minnesota. State health authorities propose to stamp out the disease by distributing toxin-antitoxin free in any amount needed to local health officers, physicians, and school boards throughout the State.

Loans for Babies, France.

French mothers can borrow or rent for new babies cradles, clothes, baby chairs, perambulators, scales, and milk sterilizers through a Cradle Society just formed by the Besancon committee of the Red Cross. Two hundred and ninety new babies have been supplied already, no charge being made in two-thirds of the cases.

Movies a Holiday Treat for Children in Bolivia.

Bolivian children of 12 years of age and under in Bolivia can go to the movies only on holidays and then just to see pictures authorized by the police, according to a decree recently issued by the President of Bolivia, the purpose of which is to safeguard the morals and welfare of the children.

Dr. G. Colbert Tyler,

Recently of Heathsville, Va., has moved to Newport News, Va., and is located at 2505 Chestnut Avenue.

Doctor Wanted.

For Smith's Island, Maryland. For further particulars, write Nick Evans, Ewell, Maryland. (Adv.)

Wanted—

By Junior Medical Student, work for summer months. Experience in didactic, religious, and laboratory work. Good technician. Year of dispensary service. B. A. graduate. Consistent worker. References. Have passed Junior Board. Write W. C. Henderson, Medical College of Virginia, Richmond. (Adv.)

Obituary

Dr. Harry Gilmore Carter,

Medical Director and Superintendent of Piedmont Sanatorium, died suddenly at that institution on the night of April 10. In the death of Dr. Carter the State has lost an able, conscientious, useful, patriotic, public servant and the medical profession a member whose scientific work contributed to its usefulness and whose whole life was in accord with its highest traditions.

He was born in Northumberland County, Virginia, November 8, 1886, and was educated in the private school of Rev. Claybrook at Kilmarnock. He graduated from William and Mary College with A. B. degree in 1908, and was principal of the High School at Heathsville for two years after which he began the study of medicine at the Medical College of Virginia. While studying medicine he taught at the Richmond Academy and also at the Richmond public night schools, by which means he worked his way through the medical school from which he graduated in 1914. He was intern at the George Ben Johnston Memorial Hospital at Abingdon for one year then began private practice in Emporia, Virginia.

Eighteen months later he broke down with tuberculosis and went to Mt. Regis Sanatorium, to Catawba Sanatorium and to Gaylord Farm Sanatorium in Connecticut.

On April 1, 1918, he assumed charge of organizing and operating Piedmont Sanatorium. The establishment of this institution had been authorized by the Legislature for the treatment of the colored tuberculous of the State. The success that has attended its operation is chiefly due to Dr. Carter's ability and skill. The Sanatorium now has a capacity of 140 and is kept filled and usually with a waiting list. The contentment and cheerful attitude of the patients and their satisfactory progress attests the splendid administration of the institution and the fine spirit of kindliness and professional skill of the Director.

Although for many months the Doctor's health was frail and delicate and he had to limit his physical exertion, his mind was always active and alert and he kept a close watch over the affairs of the Sanatorium and the welfare of the patients. His reports of the Sanatorium and the papers he wrote on the various phases of tuberculosis among the colored attracted nation-wide attention. His observations were keen and the analysis of figures accurate. His papers were scientific

and were valuable contributions to medical knowledge.

Recently he was invited by the Knickerbocker Medical Society of Cleveland, Ohio, to read a paper on tuberculosis in the Negro race. He had been working rather intensely on the paper and Saturday night announced to his wife that he had finished the paper. Soon afterwards he had a severe hemorrhage and died almost instantly.

The love and esteem in which he and his wife were held was evidenced by the large numbers that came from far and near to his home the next day; white and colored, rich and poor, and all creeds and denominations came to pay their respect and express their sorrow. The Piedmont choir sang their Spirituals at the funeral and the quartet of their own accord followed the remains to Baltimore and sang again at the interment.

Dr. Carter in 1916 married Miss Mabel Holland, of Baltimore, who survives him.. He also leaves two children—Margaret and Harry Gilmore, Jr.

E. G. W.

Dr. Lemuel Cornich Shepherd,

Norfolk, Va., died at his home in that place, April 4th, at the age of sixty-two years. He was born in Petersburg, Va., but moved to Princess Anne County when he was quite young and spent his early life in that county. He studied medicine in New York City, graduating from Bellevue Hospital Medical College in 1886, after which he returned to Virginia and joined the Medical Society of Virginia that year. For the past thirty-seven years he had been a practicing physician in Norfolk and for many years he served as health commissioner and bacteriologist for that city. He was a Mason and a prominent churchman. His wife, two daughters and a son survive him.

Resolutions on Death of Dr. L. C. Shepherd

At the regular meeting of the Norfolk County Medical Society, held April 5, 1926, the following resolutions were passed:

That in the death of our beloved confrere, Dr. Lemuel Cornick Shepherd, which occurred April 4, 1926, we have lost from our midst a wise, painstaking, conservative councilor; a gentle, considerate and sympathetic friend; a pure and active Christian gentleman. For years Health Officer of the City of Norfolk, and later City Bacteriologist, and Ex-President of the Norfolk County Medical Society.

Resolved, That the Norfolk County Medical Society express its deep sorrow at the death of our late beloved associate, Dr. Shepherd.

Resolved, further, That this memorial be spread on the minutes of the Society, published in the daily papers, and a copy be sent to his family.

P. St. L. Moncure,
R. S. Kight,
W. E. Driver,
Committee.

Resolutions on Death of Dr. George Ross.

The following was adopted by the Richmond Academy of Medicine at a meeting held on April 13, 1926:

George Ross.

Born in Culpeper County, Virginia, October 22, 1838; graduate of the Virginia Military Institute, 1859; graduated with the degree of Doctor of Medicine from the University of Virginia, 1861; elected to membership in the Medical Society of Virginia in 1872, and to honorary membership in 1906; member of the Richmond Academy of Medicine, its president for a term, and honorary fellow until his death; surgeon of the cadets of the Virginia Military Institute at the battle of New Market; honored by high office in various organizations of Confederate Veterans; president of several railroad surgeons' associations; a founder of and professor in, the University College of Medicine in Richmond; a practitioner of medicine in Richmond, with success and distinction for sixty years; died in Richmond, March 31, 1926, in the eighty-eighth year of his age.

If it be meet to praise here one whose life typified the flower of our race; if it be proper to utter here words of admiration for one whose career personified the finest traits of our profession; if it be permissible, in these times, to set down in measured phrases, words of respect, veneration and love for one whose life as a physician reflected the virtues of a Virginia gentlemen influenced and graced by the teaching of religion, surely the occasion is at hand to present an expression of our feelings upon the life and the death of our lamented member, Doctor George Ross.

The items in the prefatory biographic sketch of Dr. Ross's career serve to summarize bare events, but this is not enough. A life like his is rich in values of heart and spirit gravened on a background of the scientific and professional. As a young physician, he came to Richmond under the ban of poverty cruelly inflicted by the inexorable exigencies of civil war, and here he pursued for more than sixty years the duties of his profession. During this period, he early rose to front rank. His practice was large, his professional services being sought by a clientele ranging from the foremost citizens to the most obscure. He was ever ready and willing to serve this big practice which came to him through long years. In the several fields of general medicine of his time, he performed an excellent standard of work. In family practice he was noted for the high quality of his service; and in the lying-in room his skill was particularly demonstrated, his services being sought also by his fellow-practitioners in their obstetrical perplexities and difficulties. As a surgeon, he was not without distinction; in "railroad surgery" dealing with traumatisms incident to railroad accidents among employees and passengers, more common then than now, his skill was especially shown. In these cases, his industry, his indefatigable efforts, his strict personal care, brought many a mangled limb back to good function. For years he was the local surgeon to the Chesapeake and Ohio Railway, and

for many years he was the chief surgeon of the Southern Railway system.

Dr. Ross was connected with medical education in Richmond as a member of the faculty of the Medical College of Virginia, and, later, as a founder and professor in the University College of Medicine. In the latter he was professor of obstetrics and emeritus professor of obstetrics. His discussions will be remembered by those who had the opportunity to be under his tutelage, as being characterized by a charm and erudition rarely found in the medical lecture-room, as well as rich in scientific and practical values. Few could give finer diction to medical discussions than Dr. Ross. His lecture on the "Female Pelvis" was notable in that day; and each year when he gave this lecture, his lecture-room was crowded with students eager to hear it.

Dr. Ross was a distinguished veteran of the Confederate army. He served as surgeon to the cadets of the Virginia Military Institute at the battle of New Market; he was chief surgeon of A. P. Hill's Third Army Corps, Army of Northern Virginia. He was soldier and surgeon throughout the war, having left the University of Virginia at the beginning of hostilities at the head of the student body to join the army in Virginia. In later life, he was chief surgeon to veterans of the Southern Confederacy.

But in thus inadequately cataloguing his medical achievements, one can give only a glimpse of the man, for besides his skill in medicine, his life stands adorned with a peculi[illegible]e, a fineness, a charm, rare among men [illegible] to duty; his exquisite sense of honor [illegible]ndefatigable effort to serve; his unfailing loyalty to trust; his readiness to give of himself—these are a few specifications in the spiritual make-up of his rare personality. To these may we not add his charm of presence, his conviviality, his geniality, his winning grace of manner?

These were lesser but beautiful qualities of his fine soul. From these he gave much of optimism, of good cheer, of confidence in the sick room, in the home of sorrow and in the hearts of those who looked to him for succor and cure. Surely, these qualities of aesthetic service in the physician which assuage the anguish of fear, of grief, of pain, whether real or imaginary, by a magic optimism, must claim from us a modicum of praise and set for us a pattern for emulation in these times.

In any evaluation of one's life work, Dr. George Ross may well be placed among the foremost. He stands well abreast of that strong and virile group of medical men who came to Richmond after the civil war and served this city for years with honor to themselves and to their profession. They were strong men—strong of heart and strong of mind—of whom we, walking now in the light of their setting glory, may well be proud. In this group, the life of Dr. Ross is not diminished, but stands forth in bold relief—distinctive and clear—among his noble confreres.

In green old age, his life gently and majestically came to a beautiful physiologic end. He spent the last decade of his life retired from active work, musing upon the beauties of a higher life, shedding blessings upon those who touched the hem of his gracious spirit, giving to the home of his last days a fragrance and a beneficence that those who were fortunate enough to come within its influence, will not forget. Such a spirit as resided in this man may, like Browning, at the end, have sung:

"I was ever a fighter, so—one fight more,
The best and the last!
I would hate that death bandaged my eyes and forebore,
And bade me creep past.
No! Let me taste the whole of it, fare like my peers,
The heroes of old,
Bear the brunt, in a minute pay glad life's arrears
Of pain, darkness and cold.
For sudden the worst turns the best to the brave,
The black minute's at end.
And the elements' rage, the fiend-voices that rave,
Shall dwindle, shall blend,
Shall change, shall become first a peace out of pain,
Then a light, then thy breast,
O thou soul of my soul! I shall clasp thee again,
And with God be the rest!"

Whereas, Death has taken our venerated member Dr. George Ross, after a life of achievement and service; be it,

Resolved, That the Richmond Academy of Medicine records its high esteem and respect for Dr. Ross as a man and as a physician.

That a page be set aside in the minute book of the organization which shall be dedicated to his memory, setting forth these resolutions as well as the chief events of his splendid career.

That an expression of sympathy be tendered Dr. Ross's family, and

That these resolutions be published in the *Virginia Medical Monthly*.

MARK W. PEYSER,
Secretary-Treasurer.

Dr. George Burley Martin,

Formerly of Richmond, Va., where he was associated with the late Dr. Lewis C. Bosher, died at the U. S. Hospital at Oteen, N. C., April 11th, aged forty-three years. He was a native of Nelson County, Va., and studied medicine at the Medical College of Virginia, from which he graduated in 1910. He had been a member of the Medical Society of Virginia since that year. He served in the army during the World War and, just about the time he was to be discharged in 1919, he was taken down with tuberculosis and was sent to the Government hospital where he remained until his death. His wife survives him.

Dr. William G. Painter,

A well known and prominent physician of Big Stone Gap, Virginia, died in the George Ben Johnston Memorial Hospital, Abingdon, April 22nd, after an illness of several weeks. He was apparently in good health until February 1st, when he developed heart trouble which was the cause of his death. Dr. Painter was fifty years of age. He graduated at the Medical College of Virginia, in the class of 1901. He is survived by a wife and six children.

The Zoalite—A New Combination Ray

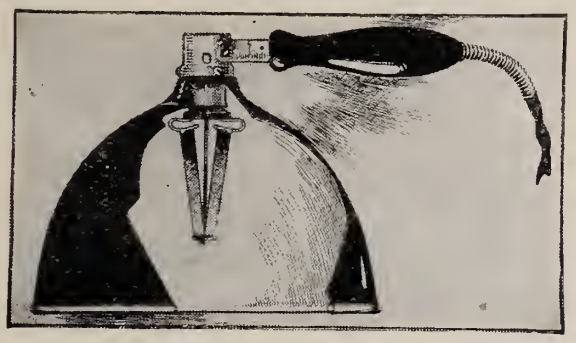


Diagram Showing Generator Used in New Burdick Zoalite Lamp.
The substance comprising the Zoalite Generator, although rather costly to produce, is of such a nature that it is extremely hard, durable, and will stand up under the most adverse conditions, thus assuring a minimum of upkeep after the moderate first cost. This material, on being slowly heated to incandescence, showed a continuous and a line spectrum combined, something heretofore unknown, except in the pure solar spectrum.

Furnished with long Cords, Plug and Special Switch, **$15.00.**

Special Goose-Neck with Clamps to fasten to chair or table. Extra, **$4.50.**

A new Generator which produces the Infra-Red and the longer-wave bands of the visible Spectrum.

Penetrates deeply into human tissue, giving quick relief from pain.

The radiations from the new Burdick Zoalite may be summarized as follows:

They are analgesic.

They are soothing and sedative.

They produce an active hyperemia of freshly oxygenated blood.

They produce heat in the tissues themselves; and as heat is atomic motion, these rays produce the highest type of cellular massage.

These rays will not burn or shock the patient or coagul[illegible]y human tissue.

They positiv[illegible] stasis and congestion by derivative action or by direct action, which is particularly indicated in anemia or circulatory disturbances.

McINTOSH DIATHERMY APPARATUS

The IDEAL High Frequency Apparatus for the General Practitioner's Office

No. 8075

Price, **$575.00** Complete.

Low energy loss, High Insulation, Step-Up Transformer.

Non-pitting. Non-oxidizable, air cooled Spark Gap, assuring constant service.

Oil immersed, Non-spraying, Franklin Glass Plate Condenser.

Three separate and distinct High Frequency currents.

High Amperage d'Arsonval current for Diathermy, Auto-Condensation and Electro-Coagulation.

Medium Voltage Tesla Current for Functional Disturbances.

High Voltage Oudin High Frequency Current for Desiccation and treatment of Neurosis.

Accurate control essentials.

Perfect Resonance.

Write for Catalogues and Literature.

Experienced men to install and service these outfits.

503 Granby Street, Norfolk, Va.

POWERS & ANDERSON, Inc.
Surgical Instruments, Hospital Supplies, Etc.

603 E. Main Street, Richmond, Va.

Capital $1,000,000 Surplus Earned $1,500,000

ESTABLISHED 1892

To act as Executor, Guardian and Trustee

$30,000,000

of investments held in Trust

Confidential Interviews Invited.

THE JEFFERSON MEDICAL COLLEGE OF PHILADELPHIA

ONE HUNDRED AND SECOND ANNUAL SESSION BEGINS SEPTEMBER 22, 1926, AND ENDS JUNE 3, 1927.

FOUNDED 1825. A CHARTERED UNIVERSITY SINCE 1838. Graduates number 14,625, nearly 6,000 of whom are active in medical work in every State, and many foreign countries.

FACILITIES: Well equipped laboratories; separate Anatomical Institute; teaching museums; free libraries; unusual and superior clinical opportunities in the Jefferson Hospital, Jefferson Maternity, and Department for Diseases of the Chest. A sixteen-story addition to the Jefferson College Hospital, containing the new Clinical Amphitheater, the Maternity Department and the new Clinical Laboratories, was opened in November, 1924. These buildings are all owned and controlled by the College. Instruction privileges in six other hospitals.

FACULTY: Eminent medical men of national reputation and unusual teaching ability.

ADMISSION: Not less than two college years leading to a degree in science or art, including specified science and language courses. Preference is given to those who have completed additional work.

APPLICATIONS SHOULD BE MADE early. ROSS V. PATTERSON, M. D., Dean.

University of Virginia

Department of Medicine

I. COURSE LEADING TO DEGREE OF DOCTOR OF MEDICINE. Entrance requirements: two years of college work (including college courses in English, chemistry, physics, and biology) after the completion of a four year high school course or its equivalent.

The medical course extends over four sessions of nine months each, the last two devoted to instruction in the wards and outpatient department of the University Hospital and in the Blue Ridge Sanatorium of the State Board of Health. Women admitted on the same terms as men.

II. COURSES OF INSTRUCTION IN PUBLIC HEALTH. The Joint Health Department of Albemarle County, the city of Charlottesville, and the University affords unique facilities for the study of problems of public health, especially those of small cities and of rural districts. Two courses are offered at present.

Course No. 1. TRAINING FOR RURAL HEALTH OFFICERS. A twelve weeks course open to graduates of medical schools.

Course No. 2. TRAINING FOR SANITARY INSPECTORS. A ten weeks course open to high school graduates, 21 years or over and to those having equivalent training.

DEPARTMENT OF MEDICINE

University, Va.

THE N. Y. ACADEMY OF MEDICINE
JUN 4 1926
LIBRARY

Virginia Medical Monthly

OFFICIAL ORGAN OF THE MEDICAL SOCIETY OF VIRGINIA

Vol. 53, No. 3.
WHOLE No. 888.

RICHMOND, VA., JUNE, 1926

$2.00 A YEAR
20 CENTS A COPY

CONTENTS.

ORIGINAL COMMUNICATIONS:

The Toxic Action of Digitalis on the Heart Muscle. Wm. B. Porter, M. D., Roanoke, Va. 141

Treatment of Breast Tumors. Julian L. Rawls, M. D., Norfolk, Va. 145

The Intravenous Administration of Gentian Violet and Mercurochrome-220 Soluble in the Treatment of Sepsis. J. S. Horsley, Jr., M. D., Richmond, Va. 148

A Rationalistic View of the Psychoneuroses. Daniel D. V. Stuart, Jr., M. D., Washington, D. C. 154

A Case of Tuberculous Peritonitis Treated with Air Injections. Nelson Mercer, M. D., Richmond, Va. 157

Report on Sputum Examinations of 1,425 Cases of Pulmonary Tuberculosis. R. Cannon Eley, M. D., and Frank B. Stafford, M. D., Charlottesville, Va. 159

The Cause and Treatment of Urinary Calculi. Blanton P. Seward, M. D., Richmond, Va. 162

Some Considerations Regarding Prostatism. R. M. LeComte, M. D., Washington, D. C. 168

"Come Over Into Our Village and Help Us." A. B. Grubb, M. D., Cripple Creek, Va. 172

Occasional Causes of Failure in Regional Anesthesia for Hernia Operations. Edward M. Hanrahan, Jr., M. D., Baltimore, Md. 173

Endometrial Cell Invasions. A. L. Stavely, M. D., Washington, D. C. 176

The Management of Lobar Pneumonia. A. E. Murray, M. D., Beaverdam, Va. 181

Treatment of Acute Lobar Pneumonia. W. A. Campbell, M. D., Old Church, Va. 183

Cancer of the Gastro-Intestinal Tract Below the Diaphragm. Samuel Orr Black, M. D., Spartanburg, S. C. 184

The Somatic Side of the Mental Patient. V. Blackstone Williams, M. D., Washington, D. C. 186

CORRESPONDENCE 189

THE COUNTY SOCIETY 189

WOMANS AUXILIARY 190

THE TRUTH ABOUT MEDICINE 190

BOOK ANNOUNCEMENTS 192

EDITORIAL 194

NEWS NOTES 197

OBITUARY 206

INDEX OF ADVERTISERS—Advertising Page 5.

CALCREOSE

Eliminates Objections to Creosote

CREOSOTE has long been used as an intestinal antiseptic as well as for its effect on pulmonary inflammations such as influenza, bronchitis, and tuberculosis.

Calcreose eliminates the usual objections to creosote. It is a chemical combination of creosote and hydrated calcium oxide from which the creosote is slowly liberated, thus aiding absorption and toleration.

Calcreose can be given in large doses for long periods without apparent difficulty.

Powder: Tablets: Solution **Samples of Tablets on Request**

THE MALTBIE CHEMICAL COMPANY
Newark, New Jersey

Diarrheas of Infants

The usual season for Summer Diarrheas of infants is just around the corner! For several summers past physicians have found

MEAD'S CASEC

or

MEAD'S POWDERED PROTEIN MILK

useful in the treatment of the common fermentative diarrheas. A formula is suggested for the physician's consideration and approval:

Whole Milk	10 ounces
Cold Water	20 ounces
Casec (2 envelopes)	⅔ ounce

Mix the CASEC with enough of the cold water in a cup to make a thin paste. Add the paste to the balance of the water, pour in the milk, and heat the mixture over a slow flame to the boiling point, stirring constantly to avoid lumps. Allow the mixture to boil actively for 1 minute, remove from stove, cool, and divide into bottles sufficient for the 24-hour feeding.

Suggested Amounts to Be Given at Each Feeding Are as Follows:

Age Months	*Ounces Each Feeding*	*Number of Feedings in 24 Hours*
1	2 to 3	7
2	3 to 4	7
3	4 to 5	7
4	5 to 6	6
5	5 to 7	5
6 to 9	6 to 8	5
9 to 12	7 to 9	5

Infants under Four Pounds may require 8 feedings, 2 ounces each, in the 24 hours

In two or three days add 1 level tablespoonful of *Dextri-Maltose* No. 1, and increase one tablespoonful every other day until the baby is taking 5 or 6 level tablespoonfuls of *Dextri-Maltose* in the 24-hour Casec feeding.

The Casec feeding may be continued for 3 or 4 weeks, then a gradual return to the regular milk mixtures of either fresh milk or *Mead's Powdered Whole Milk*, with Dextri-Maltose additions, may be instituted.

Our Literature No. 109 entitled "Certain Types of Sick Infants" fully explains the use of CASEC in diarrheas.

Samples of Casec and copies of Literature No. 109 will be furnished immediately on request.

MEAD JOHNSON & COMPANY, Evansville, Indiana, U. S. A.
Manufacturers of Infant Diet Materials Exclusively

Virginia Medical Monthly

Official Organ of the Medical Society of Virginia

Vol. 53, No. 3.
WHOLE No. 888.

RICHMOND, VA., JUNE, 1926

20 CENTS A COPY
$2.00 A YEAR

Original Communications

THE TOXIC ACTION OF DIGITALIS ON THE HEART MUSCLE.*

By WM. B. PORTER, M. D., Roanoke, Va.

As early as 1785, William Withering set the dictum that digitalis should be continued in moderate doses until it acts on either the kidneys, the stomach, the pulse or the bowels; let it be stopped upon the first appearance of one of these effects. For some years this dictum has been relegated to the scrap heap and replaced by the teaching of some of our foremost clinicians, that the real danger in digitalis therapy is in insufficient dosage.

This emphasis has prompted a heedless attitude toward the toxicology of foxglove and a blind administration of it without due regard for its potential dangers. Today this practice is fraught with real hazard, for the pharmaceutical manufacturer is now supplying the profession with potent preparations capable of producing all of the pharmacological actions of this drug. It would seem wise, therefore, to review the toxic action of digitalis on the heart muscle in the light of recent knowledge of the mechanism of the heart beat, and see how accurately the experimental and clinical facts coincide.

From experimental pharmacology we know that when a frog's heart is poisoned with digitalis, the initial changes are followed by coupling, pulsus bigeminus, and, later, by a very rapid and irregular heart action; delirium cordis sets in and death intervenes.

Cushny believes that the explanation of the fast and irregular action of the heart poisoned with digitalis is to be found in the increased irritability of the cardiac muscle.

Robinson and Wilson, in studying the progress of events that occur when the heart of a cat is progressively poisoned by digitalis, found certain phenomena made their appearance after definite percentages of the lethal dose have been given. This sequence of events, which represents increasing degrees of effect and toxicity, they found to be as follows: First, inversion of the T-wave of the electrocardiogram occurred. After additional amounts of the drug were administered, depression of the atrio-ventricular conduction made its appearance. At about this time, there was slowing of the heart rate which came on gradually. After still larger amounts, there was an increase in rhythmicity of the auricles and of the ventricles, producing acceleration of both. The ventricular rate soon exceeded that of the auricle, thus producing atrio-ventricular disassociation. At about this stage idio-ventricular complexes made their appearance. Independent ventricular rhythm with abnormal ventricular complexes developed. This was soon followed by ventricular fibrillation and death.

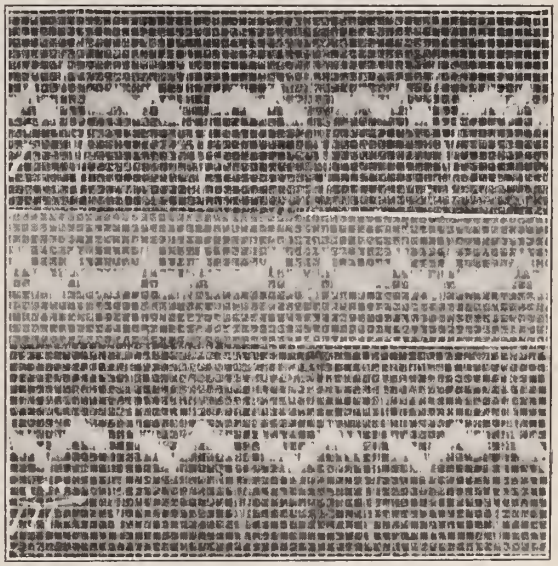


Figure 1.—Taken before the administration of digitalis. No disturbance of rhythm is noted.

Reid has recently reported five cases of ventricular ectopic tachycardia complicating digitalis therapy. In one of the cases there was a transition from ventricular tachycardia into ventricular fibrillation with immediate death.

*Read before the fifty-sixth annual meeting of the Medical Society of Virginia, at Richmond, October 13-16, 1925.

He noted that in each instance the amount of digitalis administered before the onset of this rhythm was well in excess of that indicated by the Eggleston method of dose calculation. In some of the patients the condition was confused with auricular flutter and more digitalis given.

Luten, in his clinical studies on digitalis, has reported a very interesting series of cases who developed toxic rhythms while under digitalis therapy. The similarity between such rhythms in men and in the cat is especially striking. He emphasizes this fact and calls attention to the possible transition into ventricular fibrillation.

Robinson and Hermann have emphasized the relationship of coronary occlusion and paroxysmal ventricular tachycardia. This relationship has been proven in animals and probably exists in many instances in man. These observers do not mention digitalis as a probable related factor in their cases, though it is probable from the type of cases studied that digitalis was administered.

It is well established that the intravenous administration of digitalis or some of its allies to patients under the influence of digitalis is dangerous and is frequently followed by sudden death. Various explanations have been given for this untoward result. The writer recalls such an instance in his own experience and others have been impressed with this danger.

During the past few years I have observed five patients who had cardiac evidence of digitalis over-dosage. In three of these I have been able to obtain electrocardiograms. The disturbance of rhythm observed in these patients so closely parallels that observed in animals poisoned with digitalis that the significance is of especial clinical importance. In two instances there was observed an undoubted idio-ventricular rhythm having the characteristics of an ectopic ventricular tachycardia. It should be noted that in experimental pharmacology this occurs just prior to ventricular fibrillation and death. The third case is one of peculiar interest in that there is a transition from normal QRS complexes into a typical levio-cardiogram, indicating right bundle branch block. This appeared in paroxysms and disappeared after the withdrawal of digitalis, with evident improvement in the patient's clinical condition.

Case Reports.†

Case I. A white male, aged forty-six years, was admitted to the medical service of the Lewis-Gale Hospital, December 22, 1922.

The present illness began two months previously with a severe attack of angina pectoris, lasting eight hours, which required large doses of morphine for partial relief. Following this primary illness, cardiac insufficiency had been progressive with the development of marked venous stasis and edema.

The diagnosis on admission was myocardial infarction secondary to coronary thrombosis, congestive heart failure, anasarca. Pulse rate, 98 per minute. Electrocardiogram, Figure 1, showed ventricular complexes of a distinctly abnormal type. There is a slight widening of the QRS complexes, iso-electric T-wave in lead 2, notching of the P in leads 1 and 2.

The patient was begun on a restricted dry diet with restriction of the fluid intake of 800 c.c. for twenty-four hours. Powdered digitalis was administered in divided doses, the amount having been calculated by the Eggleston formula for basal dose requirements. After the administration of approximately 60 per cent of the calculated amount of digitalis, extrasystoles appeared, disturbing the cardiac rhythm. The digitalis was discontinued but there developed in the course of the next twelve hours paroxysmal palpitation with a very rapid ventricular rate. The electrocardiograms, Figure 2, showed ventricular paroxysmal tachycardia. An independent auricular activity is easily recognizable in leads 1 and 2, rate 120, ventricular rate 204. This disturbed rhythm recurred whenever the digitalis was re-administered.

Case II. A white male physician, aged forty-six years, was admitted to the medical service of the Lewis-Gale Hospital, October 25, 1925. The presenting symptoms were dyspnea, palpitation and sub-sternal pain with slight exertion.

The clinical diagnosis was chronic nephritis, azotemic type, hypertension (blood pressure—systolic 210, diastolic 145), marked cardiac hypertrophy, congestive heart failure, and auricular fibrillation.

The patient was begun on a diet with protein restricted to forty grams with a total caloric value of 2,000. Digitalis was administered

†Previously reported in Amer. Jour. Medical Sciences, June, 1924, Vol. CLXVII, p. 821.

in graduated amounts. The pulse was lowered from 107 to 58 per minute with the development of freqeunt extrasystoles after the administration of an amount well below the calculated basal requirements. The digitalis was discontinued but there developed paroxysmal dyspnea with a rapid regular ventricular rhythm.

Electrocardiogram, Figure 3, showed a transition of the cardiac mechanism into a ventricular tachycardia, the stimuli originating alternatingly from the right and left ventricle, then entirely in the left ventricle. The tachycardia passed off gradually into a pulsus bigeminus, similar to that observed preceding the tachycardia. The paroxysms recurred frequently, lasting from six to twenty-five minutes, but they ceased to occur after an interval of forty-eight hours, presumably as the result of the detoxication of the myocardium by excretory processes.

Case III. A white male, aged sixty-four, was seen in the out-patient department of the Lewis-Gale Hospital, September 23, 1924. He was complaining of dyspnea, cough and upper abdominal soreness.

The diagnosis was cardio-vascluar sclerosis, cardiac hypertrophy, auricular fibrillation and congestive heart failure. Blood pressure—systolic 185, diastolic 85.

The basal dose of digitalis was prescribed and he was instructed to discontinue the drug when this amount had been taken. The improvement in the subjective symptoms was so great that he continued the use of the digitalis until he returned ten days afterwards. At that time the dyspnea had returned after an interval of relief and there was great physical weakness and prostration. The pulse was forty-eight per minute and the blood pressure was systolic 98, diastolic 76. The electrocardiogram, Figure 3, showed a complete heart block, auricular fibrillation, and a gradual transition of the QRS complexes into a form characteristic of right bundle branch block.

The digitalis was discontinued and after a period of six days the subjective symptoms were relieved, the blood pressure was systolic 155, diastolic 80, and the electrocardiograms had returned to their previous characteristics.

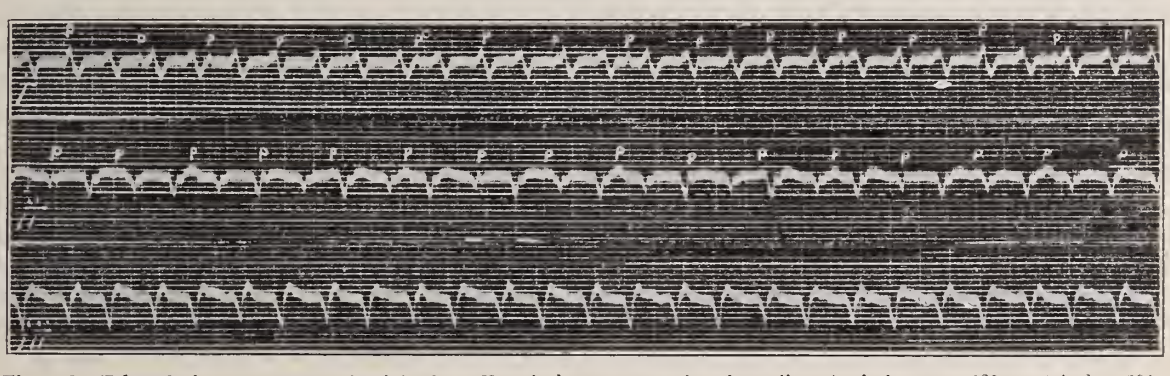


Figure 2.—Taken during a paroxysm of palpitation. Ventricular paroxysmal tachycardia. Auricular rate, 120, ventricular, 204.

Discussion

In Case I there were clear indications for digitalis therapy. This patient was suffering from congestive heart failure with oedema induced by a coronary thrombosis. The administration of digitalis in amounts well below the calculated basal dose produced a marked increase in ventricular irritability with consequent and frequent ventricular extrasystoles, passing into ventricular ectopic tachycardia. It is highly probable that the ventricular musculature was hyper-susceptible to digitalis as the result of the myocardial infarction. This observation was frequently confirmed with a recurrence of a similar toxic rhythm.

In Case II, a ventricular rate of 58 was induced by digitalis. The rate prior to digitalis therapy was 104. The dose used was well below the computed basal dosage, yet this patient developed paroxysmal idio-ventricular complexes with a rate of production of 168, which recurred in paroxysms at frequent intervals. The confusion of this ventricular ectopic tachycardia with auricular flutter would not be unreasonable from a clinical analysis. It is conceivable, however, that this confusion with further administration of digitalis, especially intravenously, would have been instantly fatal as a result of inception of a ventricular fibrillation.

In Case III, there is an entirely different toxic reaction to digitalis. In this instance, complete auriculo-ventricular dissociation occurred in a patient with auricular fibrillation. At frequent intervals there is a transition of the QRS complexes into the characteristics of a right bundle branch block with a regular rhythm of 48. With the occurrence of this mechanism there was a decided increase in the clinical signs of cardiac insufficiency, a fall in the systolic blood pressure, an increase in the venous stasis with marked asthenia and dyspnea. These symptoms occurred with a digitalic dosage well in excess of the calculated basal requirements.

It is of especial clinical note that in none of the patients here studied were there any of the usual symptoms of digitalis intoxication, such as nausea, vomiting and diarrhea.

Conclusions

1. The evidence presented in these cases and in those reported by other observers points to

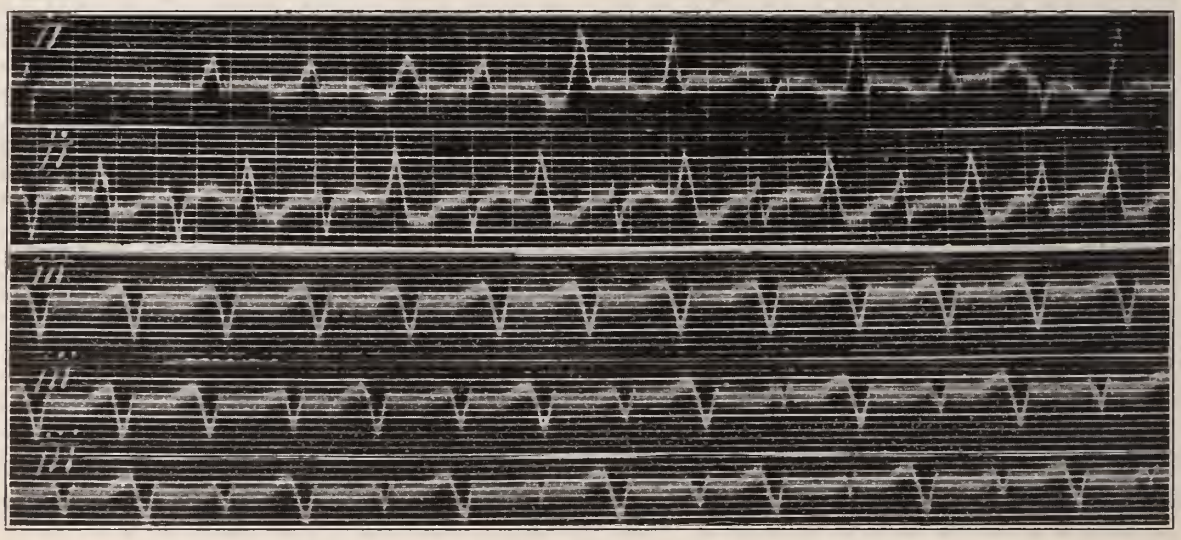


Figure 3.—Taken during an attack of palpitation. Ventricular paroxysmal tachycardia. Ventricular rate, 168. Note alternation from right to left ventricle in lead 2, second strip.

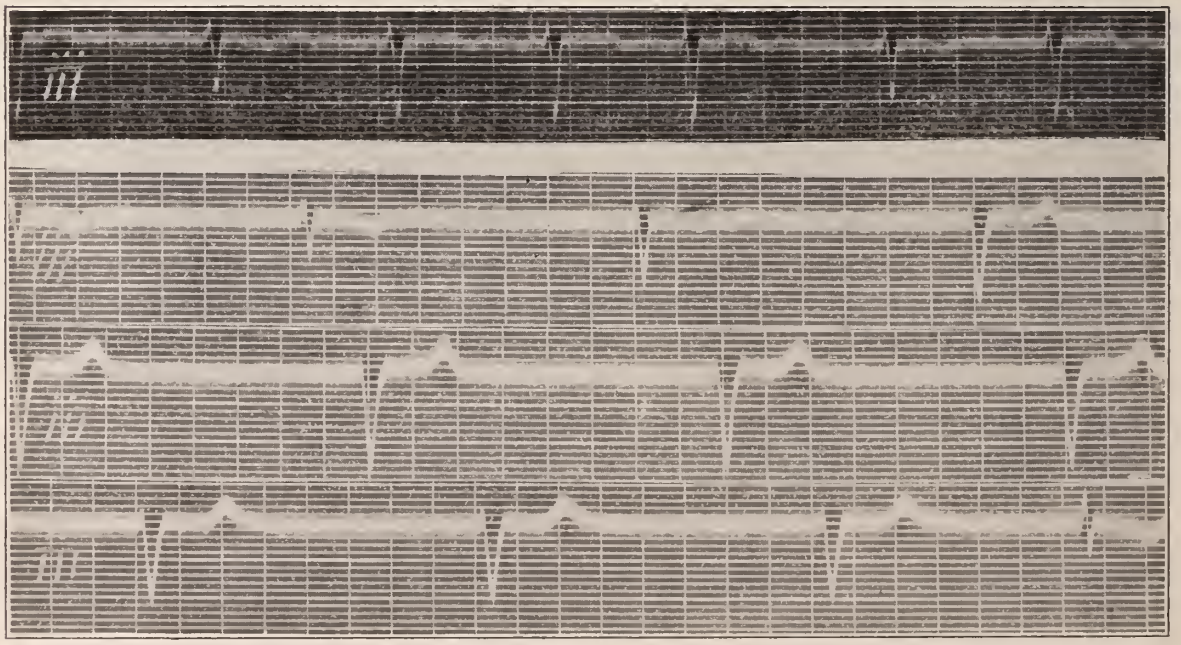


Figure 4.—Top strip shows rate and ventricular complexes, lead 3, before digitalis. The other three strips, lead 3, after digitalis. Complete auriculo-ventricular dissociation. A gradual transition into a levo-cardiogram, indicating intra-ventricular block.

a close parallelism between toxic rhythms induced in animals and those occurring in man when the myocardium is intoxicated with digitalis.

2. The occurrence of a paroxysmal rapid rhythm in a patient who is digitalized is a positive indication for the discontinuance of the drug. Intravenous administration of digitalis or its allies under such circumstances is very liable to produce sudden death.

3. Serious toxic rhythms do occur in patients with advanced myocardial disease when the dose of digitalis is well below the calculated basal requirements and in the absence of the usual accepted symptoms of digitalis intoxication.

4. The mechanism of sudden death in man from digitalis is probably in many instances a transition from ventricular ectopic tachycardia to ventricular fibrillation.

TREATMENT OF BREAST TUMORS.*

By JULIAN L. RAWLS, M. D., Norfolk, Va.

It is impossible to consider the treatment of breast tumors without taking up the question of diagnosis, because rational treatment depends absolutely upon an accurate recognition of the pathology present.

To take up individually the various varieties of tumors of the breast would not profit us much. Suffice it to say that there are listed some ten or twelve benign tumors and about fifteen varieties of malignant tumors. For the sake of brevity I wish to divide these growths into four varieties: First, those that are frankly benign and would probably remain benign over a long period of time; second. those that are probably benign but potentially malignant; third, those that are probably malignant but operable; and, fourth, those that are certainly malignant but inoperable.

We are coming more and more to the belief that no tumor is a safe inhabitant of the breast. Originally the majority of women with breast tumors appearing in large clinics already had a malignancy. At the present time, since the cancer propaganda, an increasingly larger number are showing up earlier with tumors that are benign. The inference is that formerly these benign tumors had produced sufficient irritation over a long number of years to cause malignancy. At the present time they are being seen in their benign stage and a simple removal of the growth is all that is required.

Age As a Diagnostic Point: Bloodgood states that there is only one authentic case of carcinoma in the breast of a woman under twenty-five years of age. He says, "If the patient is under twenty, the tumor may be left alone unless it exhibits growth or is very annoying from pain. Between twenty and twenty-five there is some doubt as to what is best to do. On the whole, accumulated experience favors operation. After twenty-five there is no question.—Operate." Both Erdmann and Finney take the position that no tumor of the breast should go unexplored.

I think it is agreed that a questionable tumor can better be diagnosed in the hands of experienced surgeons by the gross appearance of the growth than by frozen section. No man operating for breast tumors should be content to remove the growth, send it to the laboratory and wait for the report of the pathologist. He is no more competent to do breast surgery after years of operating than he was the day he began. The frozen section should be used as a check up on the gross appearance of the tumor, and where the clinical history and the gross appearance spell malignancy and the frozen section benignancy, the case should always be treated as a malignant tumor.

An encapsulated tumor is practically always benign and only 15 per cent of non-encapsulated tumors are benign, so we are reasonably safe in doing a radical breast amputation upon any tumor which proves to be not encapsulated.

The statement has been made that tumors in both breasts or more than one tumor in one breast probably means that the growths are benign. This has to be accepted with a great deal of caution for there are cases on record of patients who have presented themselves with well advanced malignancies in both breasts and Erdmann reports a case of a woman who had two discreet cancers in one breast four inches apart. Kilgore states, "The woman who survives a radical amputation of the breast for five years is three or four times more likely to have a cancer in the remaining breast than a normal woman of the same age who has never had a malignancy." He considers that the second carcinoma is a primary growth and not a metastatic recurrence. He

*Read before the Norfolk County Medical Society.

also states that the woman who presents herself with either bilateral tumors of the breast or more than one tumor in one breast should receive a most careful examination and, if the history is suspicious, a tumor or the breast should be removed for section and study Primrose reported that in one hundred and twenty-five cases of breast tumors it became necessary to do a double amputation in fifteen cases, eleven for bilateral carcinoma, two for carcinoma in one breast with cystic mastitis in the other, and two for chronic cystic mastitis in both breasts. Frequently a woman comes in with the statement that she has felt a mass in her breast and the surgeon fails to find the growth. These disappearing tumors are usually cysts and consequently are benign.

Both patients and a good many physicians consider that pain is a necessary accompaniment of malignancy. As a matter of fact pain is rather a late symptom, and the physician who waits for pain to advise surgery for his patient has probably doomed her to a useless operation and a cancer death. We wish to insist that a tumor alone without other symptoms demands an exploration.

It is very generally agreed that pregnancy increases the rapidity of growth in malignant tumors. Trout, of Roanoke, reports that 87 per cent of women who have had a breast removed for malignancy and who later became pregnant developed a malignancy in the remaining breast. He quotes Sistrunk as saying that a woman in the child-bearing age who has a breast removed for cancer and who has a chronic cystic mastitis in the other breast should have a simple breast amputation performed at the time of the amputation of the malignant breast or have the second breast removed at a later date. Bloodgood is responsible for the following statements: "If a lump is felt in the breast of a pregnant woman over twenty-five years of age it should be explored at once, for during pregnancy and lactation cancer disseminates with greater rapidity." When a woman knows that she had a lump in her breast before she became pregnant, immediate operation is not so essential, but it is better to remove the tumor before the birth of the child, and he selects the period between the third and fifth month as the preferable time. He also states that a lumped or caked breast in a lactating woman that does not break down and suppurate or spontaneously disappear within two weeks should be explored for malignancy.

One of the accepted signs of malignancy is the dimpling of the skin over the site of the tumor, and is best elicited by lifting the breast up from the chest wall with the tumor between the thumb and forefinger. Normally, the breast should present a rounded convex surface. With malignancy it shows a concavity or dimpling.

Retraction of the nipple, if it has existed for a long time and is without tumor or discharge, should arouse no undue suspicion. However, if it appears suddenly in a woman in the cancer age, it demands an immediate amputation of the breast and careful section through all portions for malignancy, and this holds good if retraction of the nipple is the only symptom.

Discharges from the nipple require a very careful study. They may arise from abscesses, from galactoceles or intracanalicular papilloma; in which case the discharge is almost entirely blood. The first two are distinctly benign and require incision and drainage or the removal of the growth. The papilloma is also benign but potentially malignant, and demands an amputation of the breast with careful study to determine whether a radical removal of the pectoral muscles and axillary tissue should complete the operation. Bloodgood is inclined to treat papillomatous cysts as benign, with a removal of the cyst only, but he states, if when excising the cyst, other cysts are encountered or there are a number of dilated ducts, remove the breast, or if beneath the papilloma there is no distinct wall but an invasion of the breast by the papilloma, immediately perform the radical operation for cancer. This may be a safe procedure in his hands but my feeling is that the casual operator had better consider papillomatous cysts as probably malignant. Bloodgood also states that an ulceration of the nipple, with a negative Wassermann, which does not respond to simple cleansing of the nipple and bland treatment should be considered malignant and a radical breast amputation performed at once.

Tuberculomas of the breast are usually recognized by their chronic history and the fact that for a long time there have been multiple discharging sinuses. These are best treated by simple amputation of the breast, followed by some form of light therapeusis. It

is seldom that a tuberculous breast undergoes malignant changes.

So much, then, for this rather brief survey of diagnostic points. I do not intend to take up operative procedures in detail. As a rule each surgeon has well worked out his own technique.

If the tumor is unquestionably benign and in the lower or inner quadrant of the breast, it is best removed by an incision which runs along the under and outer margin of the breast's attachment to the chest wall, and this is best determined with the patient standing up. The breast is turned back from the pectoral fascia and the tumor removed en masse. This incision is entirely hidden by the overhanging breast and the scar will not show. If the growth is in the inner or upper quadrant of the breast it is best removed by an incision that cuts straight down through breast tissue to the tumor. We should remember that the lacteal ducts radiate from the periphery of the breast to the nipple as the spokes of a wheel run from the rim to the hub. This incision should be so made as to destroy as few of these ducts as possible. This suggestion also applies to the opening of mammary abscesses.

If there is any question of malignancy of the tumor, it is best to cut straight down through breast tissue to the tumor. As the tumor comes into view under the knife, if it is benign, it should show either a distinct capsule separated from the breast tissue or the wall of a blue domed cyst. If you cut into the tumor without distinguishing a capsule, or without recognizing a cyst, or if it is a cyst but contains grumous material, it should be considered malignant. The entire area should be swabbed out with pure carbolic acid, followed by pure alcohol, and the incision in the breast carefully sutured and immediately followed by a complete radical amputation of the breast for malignancy. Never anesthetize a patient to remove a breast tumor unless you have her consent to an immediate radical amputation should it prove malignant. Recurrences in the two stage type of operation for breast malignancies run over 80 per cent, and this is true if the complete operation follows in a few days.

Cases that are probably benign but potentially malignant are best treated by simple amputation of the breast with immediate section through all the planes of the breast. The gross study should be checked up by frozen sections, and if malignancy is found a radical amputation should immediately follow. If no evidence of malignancy is discovered, a simple breast amputation is sufficient. Under this head we wish to include chronic cystic mastitis and intracanalicular papilloma.

We do not consider any type of breast amputation sufficient in malignancy unless it removes the pectoral muscles, at least in so far as is necessary to expose the axillary and infraclavicular spaces. If the growth is in the lower or inner quadrant of the breast, the dissection should remove the rectus fascia, since transmission to the liver and abdominal organs apparently is through this line of lymphatics.

Probably the usual type of breast amputation adopted by the majority of surgeons adheres closely to the technique of Meyer. In this operation the skin flaps are outlined and dissected free, then the pectoral muscles are freed from their attachement to the shoulder and the axillary and infraclavicular spaces are exposed and thoroughly cleaned out. Then this mass, together with the pectoral muscles and the entire breast are removed as one solid mass. At no time should the surgeon see breast tissue.

We class as inoperable tumors of the breast, those in which the tumor mass is firmly fixed to the chest wall, those with advanced carcinomatosis of the skin, those in which the supraclavicular glands are involved or those with either lung, liver or bone metastasis. If there is any question of this, the patient should be X-rayed before operation.

It is rather disconcerting to find how many patients show evidence of far flung metastasis from six to eighteen months after operation with no evidence of recurrence at the site of the original growth. I know of four cases recently who have had recurrence in their vertebral column.

A patient who has a large sloughing tumor of the breast from which she is absorbing toxic material should be given the benefit of a simple breast amputation, followed by X-ray. It is useless to attempt any radical relief. Another method of treating the large inoperable malignancies when they are sloughing and the patient is developing anemia from recurrent hemorrhages is to thoroughly destroy the growth with an actual cautery.

The treatment of inoperable malignancy by

radium and X-ray is to be discussed by other men. I doubt if there is any authentic case which has been cured. However, the patients do experience some relief from pain and some shrinkage of the growth, and they should certainly be given the benefit of the treatment.

We also believe that patients should be radiated after operation for malignancy, although as yet there is considerable doubt if it prevents recurrence.

I realize that I have taken exception to the teaching of some of the larger clinics, but I am speaking for the occasional operator, the man who sees breast tumors at irregular intervals. The surgeon in the large clinic can rely, with a good deal of confidence, upon the report of his well-equipped and properly functioning pathological department. He also can rely with more certainty upon his own judgment in the question of malignancy than can the casual operator. He may be able to differentiate with reasonable certainty between benign papilloma or chronic cystic mastitis and beginning malignancy, but my contention is that if in the hands of the infrequent operator a tumor appears which, in his judgment, has the possibility of malignancy, it should be treated as such and the patient given the benefit of the doubt. The radical operation is no longer a mutilating operation, and with proper care and operative technique the woman can almost always be promised an arm and hand with but little restriction in function.

As cancer in the male breast is a rather rare occurrence, I wish to present the following case operated upon in May, 1923. He has no evidence of recurrence to date, three years after his operation, and his general condition, as you see, is apparently excellent:

George R., age 61 years, married, laborer. Admitted to St. Vincent's Hospital on May 14, 1923, complaining of a hard lump in his left breast.

His *family history* was negative.

Personal history showed Neisserian infection at 17; at the same time he had an initial lesion. No subsequent trouble. Forty years ago he had pneumonia. As a child he had a dislocation of his left shoulder, which was never reduced. For sometime he has had a swelling of feet and legs, accompanied by shortness of breath. This has been better for the past twelve months. He has had a frequency of urination for some time and gets up three or four times at night to void.

Present Illness. About a year ago he noticed a small lump in his left breast. For the last few months it has been growing rapidly. He has had some pain at times. He has had a cough for the past three weeks.

Physical Examination. Well developed negro man. He has a few small palpable glands in his neck. Teeth in poor condition. Subglenoid dislocation of the left humerus, left arm atrophied, with restricted use of arm and hand. There is a hard fixed mass in the left breast, two by three inches in diameter. There are palpable glands in the left axilla. Knee jerks are almost absent. Pupils react sluggishly to light and accommodation. He has a few moist rales in his lungs. There is an accentuation of his second aortic sound but no murmurs are heard. His blood pressure is 200/110. The X-ray department reported that there was no evidence of metastasis in his lungs but a large aneurism of his aorta. The pathological department reported a urinalysis alkaline in reaction, two plus albumin, no sugar, much granular matter and phosphatic crystals. Wassermann negative.

On May 17, a radical breast amputation was done for malignancy. He was given one H. M. C. tablet, followed in thirty minutes by morphine gr. 1/6. The dissection was made entirely under novocaine anesthesia, using two per cent for nerve block, one per cent for the skin, and one-half of one per cent for the subcutaneous infiltration. He left the hospital on May 28, 1923, with the wound almost entirely healed.

Pathological Report. Tissue consists of breast, pectoral muscle and axillary fascia. Area of skin, including nipple, 12 by 6 cm. Beneath the nipple and adherent to the skin and the fascia beneath the breast is a hard indurated mass occupying the entire gland.

Diagnosis. Medullary carcinoma of the breast with involvement of the axillary glands.

708 *Medical Arts Building.*

THE INTRAVENOUS ADMINISTRATION OF GENTIAN VIOLET AND MERCUROCHROME-220 SOLUBLE IN THE TREATMENT OF SEPSIS.*

Report of 69 Injections

By J. S. HORSLEY, Jr., M. D., Richmond, Va.
From the Surgical Department of St. Elizabeth's Hospital.

Gentian violet and mercurochrome-220 soluble belong to the group of so-called new antiseptic dyes. In 1912, Churchman, formerly of Johns Hopkins, made the first elaborate study of the bactericidal properties of gentian violet. He pointed out that Gram positive organisms were markedly more susceptible to this dye than Gram negative. In a paper presented at a meeting of the Southern Surgical Association, December 11, 1923, Young and Hill, of Johns Hopkins, first reported clinical cures of sepsis by the intravenous injection of these two dyes. Shortly after hearing this paper, I performed experiments to determine the local and general effects of gentian violet and mercurochrome given intravenously in normal dogs.

It was found that injections of very small amounts of 1 per cent solution of gentian vio-

*Read before the Junior Clinical Club, Richmond, Va., March 15, 1926.

let or mercurochrome into the subcutaneous tissues, as might occur in infiltration from a faulty vein puncture, produced only a transient mild inflammation with no subsequent sloughing or induration. The intravenous injection of a 1 per cent solution of gentian violet, with the recommended clinical dosage of from 3 to 7 mg. per kilogram of body weight, caused no apparent reaction except a transient false cyanosis due to the dye itself in the circulation. Mercurochrome in similar experiments was followed by a rather marked reaction consisting of nausea, vomiting and diarrhea. Mercurochrome was distinctly noted in the vomitus, feces and urine for the first 24 hours. The dogs appeared sick, especially those having larger doses. Practically all of either dye seemed to be excreted within 24 hours by the kidneys and gastro-intestinal tract, as determined by the gross disappearance of the dyes. The dogs were killed with ether at varying intervals, and necropsy showed the thoracic and abdominal viscera grossly normal, and microscopic sections of the liver and kidneys were normal. The conclusion was drawn that either dye in doses up to 7 mg. per kilogram of body weight could be given intravenously without causing demonstrable pathological lesions.

By further experiments on dogs with intraperitoneal injections of gentian violet and mercurochrome it was found that after 24 hours all traces of the dyes had disappeared from the peritoneal cavity and there was no subsequent gross evidence of peritoneal irritation or inflammation. So far as could be determined, the course, excretion and results after intraperitoneal injections were very similar to those following intravenous injection, except that the reaction after mercurochrome was less marked. Attempts were made to give dogs peritonitis with intraperitoneal injections of a mixture of virulent cultures of colon bacilli, staphylococci, and streptococci. A fatal peritonitis could not be consistently produced by this means. Consequently, the results on dogs with peritonitis, treated by intraperitoneal injections of these dyes, could not be definitely stated. Subsequent necropsies, however, seemed to show less peritoneal disease following the use of either of the dyes (given at intervals from a few minutes to 48 hours after the injection of the virulent bacteria) than when the dyes were not used.

Clinically I have on numerous occasions used these dyes in peritonitis cases by injecting them (chiefly mercurochrome) into the peritoneal drainage tubes. Favorable results were often noted, but these were considered only the local effects of the dyes, since too little actual absorption through the peritoneum can take place where there is ample drainage. Mercurochrome is a very efficacious local antiseptic in these conditions, but gentian violet seems to be of little local value. Further experience in clinical work will have to be accumulated before the intraperitoneal injections of gentian violet and mercurochrome in treating sepsis can be placed on a firm scientific basis. Since the Spring of 1924 there have been given by me or under my supervision 18 intravenous injections of mercurochrome in 12 patients, and 51 intravenous injections of gentian violet in 38 patients. This makes a total of 69 intravenous injections of these two dyes in the treatment of 50 patients suffering with different types of sepsis. In April, 1925, I reported 32 intravenous injections of gentian violet in 25 patients, which is also included in this series.

Preparation and Dosage

Pure gentian violet may be best obtained and kept in the powdered form and mercurochrome in the granular form. The solutions, especially of mercurochrome, do not keep well and should always be freshly made up for each intravenous injection. An aqueous solution of ¼ per cent to 1 per cent may be used. A ½ per cent gentian violet solution and a 1 per cent mercurochrome solution seem most practical, since gentian violet does not dissolve as readily as mercurochrome. Sterile freshly distilled or doubly distilled water is used in making up the solutions. All needles, syringes and containers should be thoroughly rinsed with sterile distilled water. The accurately weighed drug is then added to the proper amount of warm sterile distilled water and gently mixed. This is allowed to stand for at least half an hour. The solution does not have to be sterilized again, as it is antiseptic. Just before use the solution is filtered through sterile gauze (six or more layers). In giving gentian violet the solution must not be allowed to stand in the syringes, as this may cause the plunger to stick.

To prevent accidents, care must be taken in the preparation of the solutions. The intra-

venous injection of any drug is not to be regarded as a slight matter. Especially is this true when such large quantities of antiseptic solutions as these are being used.

The smallest dose of gentian violet given in this series was 3 mg., the largest 7 mg., and the average was 5 mg. per kilogram of body weight. The smallest dose of mercurochrome in this series was 2½ mg., the largest 5 mg., and the average was 4 mg. per kilogram of body weight. It is often advisable to follow up the initial dose with subsequent ones at daily or two-day intervals, depending upon the amount of improvement and the general and local conditions.

One of the superficial veins of the forearm or elbow is preferable for the site of injection, though any available vein can be used. The same technic is employed as in giving neo-salvarsan or any other intravenous medication. The solution should be injected slowly, at least four minutes being taken to make the complete injection. If the solution is administered too rapidly, the patient will complain of a flushing sensation of heat, slight nausea, faintness or a sensation of constriction of the throat or chest.

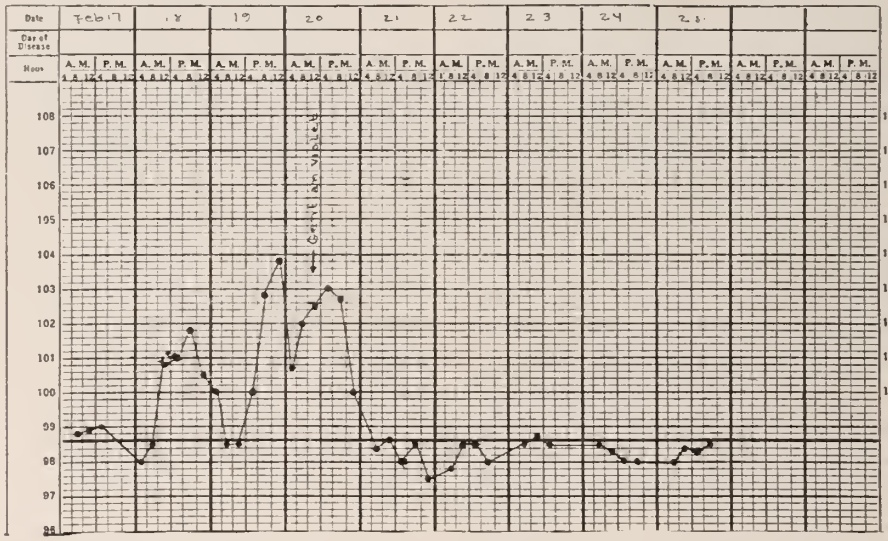


Fig. 1.—Temperature chart of a man 40 years old who had a severe suppurating infection of an abdominal wound which the usual methods of treatment failed to improve. He was given one intravenous injection of gentian violet (dose, 5 mg. per kilogram of body weight) following which his temperature dropped to normal and remained there. The incision improved very rapidly and within five days a foul, soggy, suppurating wound was clean and healing rapidly by healthy granulations. This case, with chart, was reported by me in the **Va. Med. Monthly**, June, 1925, in an article, "The Intravenous Use of Gentian Violet in the Treatment of Sepsis: A Report of 32 Injections."

Analysis of the Fifty Cases

The youngest patient was 7 months and the oldest 66 years.

A careful study of the urinalyses, blood counts and smears taken before and at intervals after injections showed no change other than a transient albuminuria in those patients who had definite reactions following mercurochrome. No other ill-effects, no salivation, no permanent staining of surfaces or organs were noted, except the frequent immediate reactions which will be discussed in detail later on.

Gentian Violet. Of the 38 patients receiving 51 injections of gentian violet, 11 were cured, 10 were markedly improved, 8 showed slight or transient improvement and 9 were unimproved. There were no deaths from injections. Except for the transient, decided pseudo-cyanosis and a very temporary rise in temperature (not more than a degree F.), there were only 3 reactions of any consequence. One of these was a general reaction characterized by a chill with subsequent high fever and followed by decided improvement. The other two reactions were local in character, an indurated periphlebitis extending several centimeters along the vein from the sites of injections. These cleared up after several weeks without sloughing or pain. Both local reactions, I believe, were due to a too hasty preparation of the gentian violet solution for immediate use. Incidentally, both of these cases were cured.

Of the 38 cases of sepsis treated with gentian

violet, all except 3 had smears and cultures which showed a Gram positive staphylococcic organism. Two of these had an early acute phlebitis of the femoral vein and the other a typical Gram positive staphylococcic infection with multiple recurring furuncles. These two cases of phlebitis were cured by this form of therapy. Shallenberger, of Atlanta, has reported a series of cases of acute phlebitis treated successfully by the intravenous injection of gentian violet. He stated that the most predominant etiological organism in phlebitis is a Gram positive staphylococcus, but the organism in this condition is very difficult to culture from the blood stream. In such cases a therapeutic test or trial is justifiable even if the causative bacteria cannot be cultured.

As stated above, in 9 out of the 38 cases no improvement was noted, and there were 8 with slight or temporary improvement following the intravenous use of gentian violet. A careful study of these cases shows two chief reasons for little or no improvement. The most common is a mixed infection or one where Gram positive staphylococci are either not present or not predominant. The second cause of failure is seen in those cases where the blood cannot readily reach the infected foci, as, for instance, large areas of necrosis or areas where the blood supply is scant, as in sloughs, large pus pockets, chronic necrotic bone and joint conditions. Gentian violet seems only to affect those bacteria that are accessible to the blood or lymph streams.

Mercurochrome. Of the 12 patients given 18 injections of mercurochrome, 1 was cured, 3 were markedly improved, 6 showed slight or transient improvement, and 2 were unimproved. There were no deaths from injections. No reactions of any consequence followed 7 injections; moderate reactions, consisting of nausea, a rise in temperature of 1 to 2 degrees F., and occasional mild diarrhea, occurred after 9 injections; and severe reactions after 2 injections. One of the last two patients had a chill of 20 minutes' duration followed by a temperature of 106° F., nausea, vomiting, and moderate diarrhea. There was a transient albuminuria, but no other untoward effect. This patient was, however, the only one of the series who was cured. The other severe reaction occurred in a patient with a large liver abscess. He was one of the two who were markedly improved, but died several months after leaving the hospital. Gentian violet was first tried in this case, but had no effect at all.*

Of the 12 cases of sepsis treated with mercurochrome, all had smears and cultures which showed Gram negative organisms, either in pure cultures or mixed. Nine of these 12 cases were so critically ill that mercurochrome was given almost as a last resort. Of these 9, 1 was cured, 1 very markedly improved, 6 went on to death, and 1 got well in spite of both mercurochrome and gentian violet. Of the 6 patients who died, 2 had streptococcic septicaemia with acute endocarditis; 1 streptococcic septicaemia with acute meningitis; 1 streptococcic cerebrospinal meningitis; 1 pneumococcic meningitis; and 1 streptococcic peritonitis with intestinal paresis. This series of cases, treated with intravenous mercurochrome, is too small to warrant any definite conclusions, but my impression is that mercurochrome gave best results in Gram negative infections, especially the gonococcus and the colon bacillus group. Furthermore, unless its use is followed by a decided reaction, no definite improvement may be expected.

Comment

Whether the blood stream may be sterilized by these two dyes or any antiseptics appears to me to be very doubtful. At the meeting of the American Surgical Association, May 5, 1925, Walton Martin, of New York, presented an excellent paper entitled "The Conception of Stepticaemia and the Fate of Microbes in the Blood Stream," in which he shows the futility of attempting such a sterilization. He points out the very complex and variable nature of the so-called septicaemias. He admits that there can be no question of the powerful reaction following the intravenous injection of certain chemicals; the chill, high fever, diarrhea, appearance of the patient, all suggest a violent disturbance. Further, one cannot dismiss the evidence presented of rapid recovery. But just how often this occurs, how much is due to the bactericidal action of the drug, and

*Another patient, 25 years old, suffering with a very acute prostatitis had 2 intravenous injections of a 3 mg. per kilogram of body weight dose on successive days. A mild reaction followed the second injection. Immediately after the second treatment he developed reddish patches on the skin of the groins and the flexor surfaces of the arms and thighs. The rash was transient, lasting only a few hours. For about 3 days after the injections he complained of sore gums, but had no definite salivation or stomatitis. The patient's prostatic condition was very markedly improved. The skin rash and sore gums seen in this case were not observed in any others of the series.

how great is its toxic effect on the body cells is still undetermined. It is possible that at times substances are liberated that are harmful to the bacteria, or the drug's action may be dependent on how much it stimulates or conserves the natural defense mechanism of the body. It would seem that, if the drug acted directly on the infecting organism in the blood stream, the most favorable type of patient would be one with ulcerating lesion on the heart valves and a bacteremia. This lesion is local and accessible to the antiseptic, but in spite of this such cases in this series showed only transient or no improvement, and the disease followed a progressive and fatal course.

The only micro-organisms so far successfully treated in the human being by drugs are the casuative agents of malaria and syphilis. There is much disagreement about the proper classification of the spirochaete, but it may be stated that neither it nor the plasmodium of malaria belong to a group of true bacteria. In neither instance do we speak of sterilizing the blood, but of curing or arresting the disease. To state that the blood is sterilized by the intravenous injection of chemicals, as a test tube containing a broth culture is disinfected, is misleading and erroneous.

Major Walker, of Hot Springs, Arkansas, has definitely shown that mercurochrome in concentrations varying from 1:25,600 to 1:400 has no appreciable effect on the bactericidal properties of fresh defibrinated blood toward the colon bacillus; that mercurochrome in a dilution of 1 to 200 completely destroys this activity; and further, that staphylococci and streptococci grow much more luxuriously in blood containing dilutions varying from 1:25,-600 to 1:400 of mercurochrome than they do in fresh defibrinated blood without mercurochrome. He believes that this results from an injurious action of the mercurochrome on the leukocytes, and constitutes at least a theoretical objection to its intravenous use. Any beneficial clinical results which may follow the use of mercurochrome in septicaemia can not, in Walker's opinion, be attributed to the specific action of mercurochrome on the causative organism.

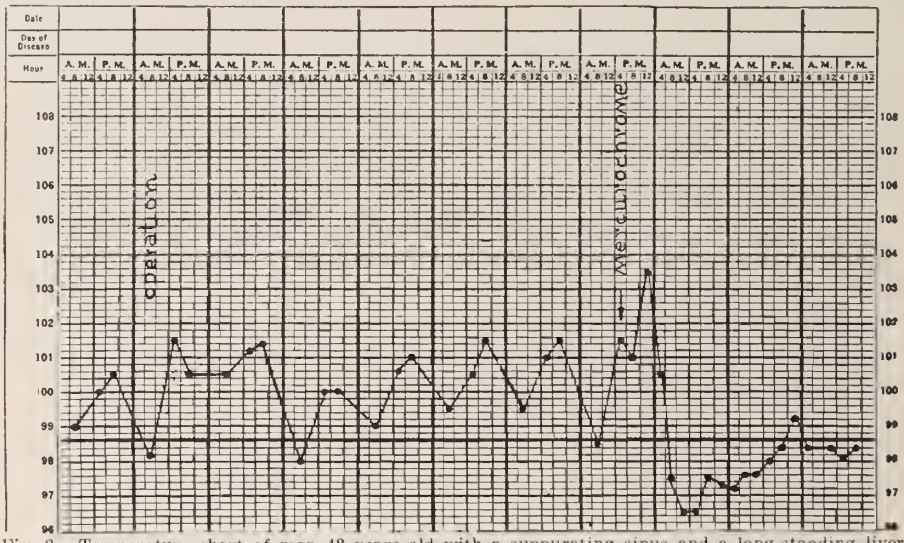


Fig. 2.—Temperature chart of man 42 years old with a suppurating sinus and a long-standing liver abscess who was given one intravenous injection of mercurochrome (dose of 5 mg. per kilogram of body weight) after operation and all other forms of treatment had been used without improvement. A moderate reaction followed with subsequent fall of temperature to normal for remaining hospital stay. Died several months later, probably from extension of liver abscess. Note the typical septic temperature previous to the injection (arrow) and the sharp rise just after the injection with the very sudden drop to normal.

The mode of action of these intravenous drugs is quite complex and as yet unsatisfactorily explained. In some unknown way they decrease the activity and toxicity of certain bacteria, or increase the immunity and defense powers of the body, or possibly act in both ways. The ultimate clinical result seems often to be dependent largely on the severity of the reaction which follows the introduction of these dyes into the blood stream. This is especially true of mercurochrome, and is also true of bichloride of mercury (so far as I have observed in a few cases), and to a less extent it is true of gentian violet. Matas has mentioned the fact that the very ill patients, who

have reactions (chill with subsequent fever, etc.) during or following the continuous administration of 5 per cent glucose solution into the vein, seem more likely to recover than those who have no reaction. Recently I have treated 11 cases of sepsis, similar in nature to those reported in this gentian violet group, with increasing intramuscular injections of milk, and find that, following the reaction thus brought about, the benefit is often as great as after the intravenous injection of gentian violet and mercurochrome. These results, however, can not be obtained as quickly as with the dyes, though this form of treatment has fewer severe complications. I wish to give a more detailed report of this work later. It may be stated, however, that a severe general reaction of the type described favorably influences the course of certain cases of sepsis and the benefit does not altogether seem to be dependent on some specific drug or antiseptic. Gentian violet appears to be more or less specific against the Gram positive staphylococci, even in the absence of any appreciable reactions; whereas the specificity of mercurochrome is decidedly less definite, and apparently its results are greatly influenced by the extent of the reaction. These antiseptic dyes should be given intravenously only after all other customary methods of treatment have failed, or have produced too slow improvement. Their promiscuous intravenous use without thorough study of the septic condition and hospitalization of the patient is to be condemned.

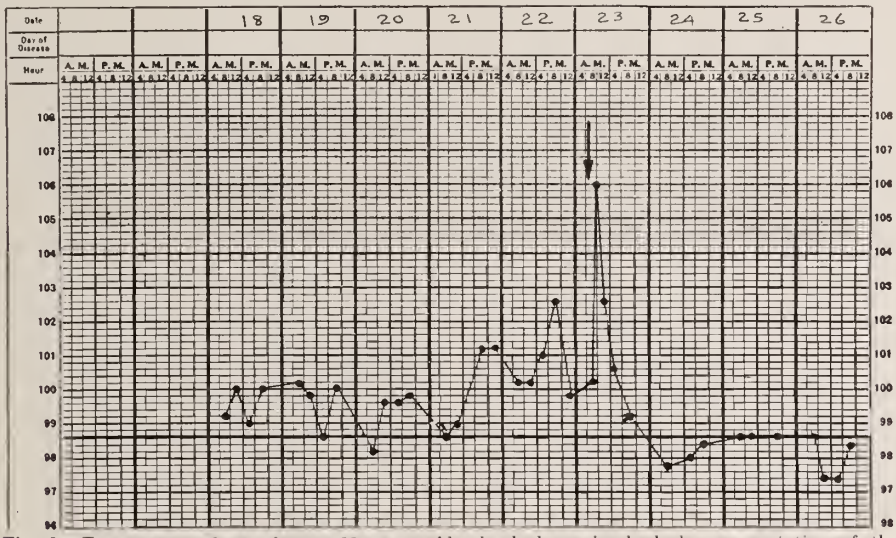


Fig. 3.—Temperature chart of man 32 years old who had previously had an amputation of the penis for a long-standing ulcer with early carcinoma. About ten days after operation he began to have slight discharge from the wound and an afternoon fever. Smears taken from the wound showed a hemolytic streptococcus and an organism simulating the gonococcus. Patient became decidedly worse and gave clinical evidence of an early septicaemia, though this was not confirmed by blood culture. One injection of mercurochrome (dose, 3 mg. per kilogram of body weight) was given, which was followed by a severe chill of twenty minutes' duration, with nausea and vomiting and a moderate diarrhea. Temperature rose to 106° F. after the chill and the next morning was subnormal (97.8° F.). His temperature remained normal for the rest of his hospital stay; the wound healed rapidly and all general and local evidence of infection disappeared. There was a transient albuminuria, but no other untoward effects. This was the only patient in the series of twelve who was definitely cured by the intravenous administration of mercurochrome.

Conclusions

1. In doses varying from 3 to 7 mg. per kilogram of body weight, properly prepared ½ per cent to 1 per cent aqueous solutions of gentian violet were given intravenously 51 times to 38 patients, with decided improvement to 21 and with only 3 reactions. In sepsis where Gram positive staphylococci were the sole or predominant etiological organism, and where the lesions were accessible to the blood stream, the intravenous use of gentian violet was justifiable and often most beneficial.

2. In doses varying from 3 to 5 mg. per kilogram of body weight, freshly prepared, 1 per cent aqueous solution of mercurochrome was given intravenously with subsequent improvement in only 4 cases of sepsis out of 12 treated. Sepsis caused by Gram negative organism of the colon bacillus group and by the gonococcus showed most improvement in this series of 18

injections. Nine moderate and 2 severe reactions occurred. An absence of reaction was usually followed by no definite improvement. The more severe the reactions (as characterized chiefly by the rise in temperature), usually the more definite and lasting was the improvement. Mercurochrome is a very powerful drug and must be given only with the greatest care and judgment.

3. Doses of less than 3 mg. per kilogram of body weight with either of the two dyes were of little, if any, value. Often several injections at intervals of one or several days were necessary to obtain the full therapeutic effect.

4. The mode of action of these intravenous dyes is complex and as yet unexplained. Similar results followed the increasing intramuscular injections of milk at repeated intervals and may occur after powerful reactions caused by other intravenous preparations.

BIBLIOGRAPHY.

Horsley, J. S., Jr.: The Intravenous Use of Gentian Violet in the Treatment of Sepsis. A Report of 32 Injections. *Va. Med. Monthly.* June, 1925.

Martin, W.: The Conception of Septicaemia and the Fate of Microbes in the Blood Stream. *Annals of Surgery.* September, 1925.

Shallenberger, W. F.: Gentian Violet Solution Intravenously in Treatment of Phlebitis. *Surg. Gynec. Obst.*, 39:291-292, Sept., 1924.

Walker, J. E.: Effect of Mercurochrome—220 Soluble on the Germicidal Properties of Fresh Defibrinated Blood. *Arch of Path. and Lab. Med.*, 1: 199-204, February, 1926.

Young, H. H.; Hill, J. H., and Scott, W. W.: Treatment of Infectious Diseases with Mercurochrome-220 Soluble. *Arch. Surg.*, 10:813-925, May, 1925.

617 *West Grace Street.*

A RATIONALISTIC VIEW OF THE PSYCHONEUROSES.*

By DANIEL D. V. STUART, Jr., M. D., Washington, D. C.
Associate Clinical Professor of Neurology, Georgetown University.

So much has been written about the psychoneuroses during the past thirty years that the subject is getting a little shop worn. A great deal that has come out has been broad and helpful; while some has been based on ready-made ideas and pet theories, but has been useful in showing us new points of attack. Lately there seems to be a tendency to write about the neuroses in terms hard to understand unless the reader happens to have a cross-word puzzle dictionary handy. When we dissect out the underlying idea in papers of this type, if we can find it, it generally turns out to be something that has already been said a good many times in a simpler and better way. This paper does not bring out any startlingly new views. It seemed to me worth while, though, to try to formulate a common sense solution of the problem that neurotic states present.

Twenty years ago, Dubois, in his "Psychic Treatment of Nervous Disorders," came out with a rationalistic concept of the neuroses. The book had a real value, but the author held to the idea of a basic nervous instability. He felt that neurotics were of unsound timber to start with; and so, in reading his work, we find the curious contradiction of a man trying to cure by re-education a condition which he believed to be at bottom incurable.

For three-quarters of a century psychiatrists have been hunting for an explanation of the various kinds of mental disturbances, and it seems to me that only in the last two decades has any real headway been made. The longest stride forward lies in the modern tendency to regard mental disease in general, and the psychoneuroses in particular, as problems of personality—failures of adjustment of the individual to his circumstances of life. This viewpoint is fairly widely accepted; but when it comes to finding the reasons for these maladjustments, the explanations presented range all the way from the neurotic constitution hypothesis, which dies hard, to the latest assumption of Freud's followers. Literally, one man's opinion is as good as another's; provided, only, it is backed by a reasonable amount of training, experience, and judgment.

My own idea of these neurotic personality problems has only taken shape within the past six years. I may have to change it in some details as time goes on, but I believe that it is in the main basically sound. For my own purposes I would divide people at large into three main groups:

1. n NORMAL
(With Variations).
2. n PSYCHOTIC
(With Variations).
3. n CONSTITUTIONAL MENTALLY DEFICIENT
(With Variations).

It seems to me that a pretty distinct dividing line separates the normal from the psychotic group, though most psychiatrists see no clear cut distinction between them. Commonly they lump all mental disturbances under the latter heading, and regard certain of the psychoses,

*Read before the Medical Society of the District of Columbia, January 13, 1926.

such as the schizophrenic, manic depressive, and paranoic types as being purely psychogenetic—that is, born of the patient's own distorted thinking. As for the psychoneuroses, the general trend is to look on them as a sort of half-way station between normality and the graver forms of mental illness. For a number of reasons that cannot be taken up here, I do not hold to this view of the situation. My belief has always been that the out-spoken psychoses, with the single possible exception of the manic depressive type, have a real foundation in physical pathology, though their symptoms may develop from a psychogenetic basis. This is partly borne out by some recent investigations. The psychoneurotic patient, on the other hand, seems to me to be at his worst only a variant of the "normal" main group. This is the first point to be stressed. To me it is the key-note of the whole explanation of the psychoneuroses. A little observation will soon convince any one that the symptoms from which a neurotic patient suffers, no matter what they are nor how severe, represent nothing but the exaggeration of something which every so-called normal individual experiences at times. To put it in another way, every human being reacts to his problems and difficulties of life in exactly the same way and sometimes with the same exaggerations as does the neurotic. Also, it is perfectly plain that these reactions are only the expressions of anxiety aroused by the circumstances with which the individual is confronted. For these reasons I think of the psychoneurotic as a variation of the normal group.

The second point to be emphasized is that this variation can hardly be considered an indication of inborn weakness, nor the result of physical disease. The old neurasthenia and psychasthenia concepts of Beard and Janet would have it that the neurotic is constitutionally unable to stand the same amount of stress in the shape of the difficulties of life as the stabler individual is. If this were true, the treatment of psychoneurotic states would be more hopeless than even our present day handling of the cancer problem. By no known method can constitutional weakness be transformed into constitutional strength, yet we all know neurotic patients who have quite literally recovered: who have not simply gotten rid of their symptoms, but who have reached the point where problems as great as those responsible for their upset in the first place, sometimes the very same problems, no longer disturb them. Now, of course, no such thing could happen if these people's symptoms had their origin in an inherited inability to stand stress and strain. In that case they would certainly again show their anxiety reactions under like conditions of strain, since no treatment of any kind could possibly raise their constitutional limit of endurance. As for physical disease, it is perfectly true that the symptoms due to a visceroptosis, or to eye-strain, or to any illness, may bring to light an otherwise latent neurosis. It does not require any stretch of the imagination though to put such conditions in the class of problems too great for a potential neurotic to handle without difficulty; and I do not see how they can be thought of as creating a neurosis out of whole cloth. Physical illness in a neurotic should, of course, be properly treated, but relief of physical symptoms never yet cured a neurosis. Nor can the maladjustment of the neurotic patient be accounted for by the kind of problem that he is called on to face. His difficulties are never, generally speaking, different from those with which every one, neurotic or non-neurotic, is confronted at times; whether they concern his bodily health, his own thought processes, or his external circumstances. It seems to me impossible to escape the conclusion that the neurotic patient's troubles, his failures of adjustment and inadequacies, are the out-growth of nothing more formidable than his own mental attitude toward these same problems,—an attitude essentially of timidity, a lack of sureness of his own ability to handle his difficulties satisfactorily.

Now I do not for a moment believe that one baby is born with the capacity for developing sureness of self in later life and another baby without that capacity. I believe that the amount of self-confidence we possess is determined wholly by the effect of our childhood training and surroundings. Human beings have certain inborn character traits, inherited, if you like, among which are imaginativeness, sensitiveness, and quickness of response to emotional stimuli. Every neurotic patient belongs in the imaginative, sensitive, and emotionally quick class, but there is nothing abnormal about these attributes. Plenty of people who have them are quite stable in their reactions; therefore, we cannot regard these traits as evidence of a neurotic make up.

When the childhood history of a neurotic patient is carefully taken, it nearly always develops that during his formative years he was subjected to methods of training which fall roughly into one of three groups. Either he was brought up by parents or other adults who over-sheltered him from the small but very real problems and difficulties of childhood; or, rarely, exactly the reverse was true, and he was so abused and beaten about that his tendency to self-assertiveness was broken; or, if neither of the above circumstances played a part, he was surrounded by an atmosphere of tension and anxiety in the grown people with whom he was most closely associated. Finally, another faulty factor, which might be classed broadly as environmental, enters into the childhood life of a small group of neurotics. I refer to physical defects, among which stammering, deformities of all kinds, and deafness, seem to me to be the most important. I do not see how any of these types of upbringing, or the physical handicaps mentioned, can fail to make a lasting impression on the developing mind of an imaginative, sensitive, emotionally quick child; and it seems to me that the net result of all of them must be the same. They must all prevent such a child from acquiring the amount of self-confidence that would allow him to meet the problems of life with a comforting sense of his own fitness. By the same token, exactly these same circumstances might have little or no effect on a more stolid and less emotional child. This last assumption would account satisfactorily for the fact that some members of a family may be highly neurotic, while their brothers or sisters, brought up under the same conditions, may be quite free from any so-called nervous taint.

The above sums up in my mind the neurotic situation as briefly as it is possible to outline it. The whole thing might be expressed in some such formula as this: The neurotic patient is a sensitive, an imaginative, and emotionally quick adult, and was a sensitive, an imaginative, and emotionally quick child. His formative years were spent in an atmosphere that acted as a drag on his developing self-confidence. As a result, he grew up unable to face the problems of life with any real ability to gage and handle them properly. This inability, in turn, gradually bred in him a latent chronic anxiety which forces its way into consciousness whenever its possessor is faced with a problem greater than he can handle with comfort. Lastly, the forms under which this anxiety shows itself are what we call the patient's symptoms, and these forms are determined by purely accidental circumstances.

So far, for the sake of clearness, I have not spoken of the Freudian theory of the psychoneuroses; but it is far too important to leave untouched. Freud has done a tremendous service to the study of mental illness by calling our attention to the need of interpreting symptoms and by turning a searchlight on a taboo subject. There is no doubt at all in my mind that his concept of a polymorphous, perverse sexuality in childhood, is correct. Any one who watches the development of children from two to six years of age will soon be convinced of its truth. Neither do I doubt that fixation of psychosexual development may occur at any childhood level; and I am sure that many neurotic and psychotic symptoms are the direct expression of such a fixation. I do not believe, though, that this process ever takes place in children who have been taught to stand on their own feet.

The above is what I mean by a rationalistic view of the psychoneuroses; all of which seem to me to be at bottom identical,—from a major hysteria to the same sort of mild anxiety which most of us feel when we have to meet a disagreeable situation. If this view is correct, the treatment of all these conditions must also be identical, and it must take the form of an effort to build up in the neurotic the ability to stand on his own feet in the face of his problems of life,—to develop his under-developed self-confidence. Everything else—the explaining away of symptoms and the bringing to light of submerged fixations—is secondary to this objective. It can be accomplished if the patient really wishes to get well, and if he has intelligence and tenacity of purpose. When I speak of wishing to get well, I do not mean to imply that the psychoneurotic consciously enjoys his complaints. Ninety-nine times out of a hundred he wants desperately hard to be rid of his symptoms. However, shaking off the symptoms would entail his taking up, like every one else, the problems and burdens of life. This is more than he can face with comfort, and so, of the two evils, neurosis or the facing of life's hardships, he chooses the former. Generally, this choice is

an unconscious one, but I am certain that sometimes the patient knows perfectly well what he is doing.

If he is properly brought up, a child learns sureness of self as effortlessly as he learns his own language. Through the example shown him by those who bring him up and through the direct teaching which he receives, he learns to size up and evaluate his simple problems, and to fight his own battles. The questions that he puts to his parents, many of them prompted by his own biological trends, are answered sensibly and as fully as possible. The result of all this is a healthy matter-of-fact attitude, which serves him in good stead when he is called on to face the more complex difficulties of grown life. A patient who is to be relieved of a neurosis must first of all be shown that his trouble is nothing to be afraid of. He must be convinced that his neurosis really had its roots in nothing worse than the concept which I have given above. Above all, he must be taught not to consider himself a constitutional weakling. Once that is firmly fixed in his mind, his ever-present fear of his own condition is largely done away with and the first step towards recovery is accomplished. Next, he must be taught to evaluate his own difficulties in order that he may see for himself how much overweight he has been giving to them. Sureness of self and an increased ability to face life satisfactorily follow automatically. All this takes time, patience, and tact on the part of the physician; and, on the patient's part, as I have said, intelligence, perseverance and the will to recover. Given this combination, I believe that it is possible to re-educate any neurotic, and to send him away better armored against a recurrence of his upset than he was against its onset in the first place.

The Wyoming Apartments.

A CASE OF TUBERCULOUS PERITONITIS TREATED WITH AIR INJECTIONS.*

By NELSON MERCER, M. D., Richmond, Va.

Historical Summary

In 1912, Godwin reported in the *Lancet* that he had injected oxygen into the peritoneum of patients during abdominal operations and had noticed improvement in their symptoms. Bainbridge, of New York City, in 1913, found that beneficial effects were produced in patients with tuberculous peritonitis when oxygen had been injected into the peritoneum for stereoscopic X-ray pictures of the abdominal viscera and adhesions. In 1921, Stein and Stewart described the technic of pneumoperitoneum when employed for therapeutic purposes in patients with tuberculous peritonitis and they used air instead of oxygen in their work.

Mattick and Gilbert, of Colorado, simplified the technic by using the same needle for the removal of the fluid and the injection of the air, reporting two patients who had been benefited in 1924 by this treatment. Only a few patients throughout the United States have been treated by this method for the relief of symptoms and the removal of the peritonitis.

Theories of Action

First: The foreign body, air, injected into the peritoneum causes a marked reaction of the tissues to the infecting organism.

Second: The air or some of its elements under pressure has a specific action on the tubercle bacilli in the peritoneal cavity, causing their destruction.

Comparison With Other Treatments

First: Pneumoperitoneum in tuberculous peritonitis is the simplest, safest, and most logical method of treatment.

Second: It can be repeated as often as necessary until all fluid and symptoms disappear and remain away.

Third: It is worthy of universal practice in tuberculous peritonitis as it offers better prospect of cure within a shorter time than laparotomy, heliotherapy, and X-ray, without the dangers of a major operation and general anesthetic with the attendant shock to the patient.

Report of Case.

F. B., colored girl, age 14 years, attending school. Referred by Dr. A. E. Turman, on April 24, 1926, for treatment for tuberculous peritonitis and pulmonary tuberculosis.

Chief Complaint—Marked fatigue on least exertion and in the morning upon arising.

Other Symptoms—For past two months has run temperature of 102 to 103 daily in the afternoon. Dyspnea marked. Abdomen distended with fluid. Diarrhea and indigestion for past three weeks with abdominal pain frequently.

*Presented at a meeting of the Richmond Academy of Medicine, May 11, 1926.

Family History—Negative.

Past History—Negative.

Present Illness—For past two months has lost much weight and noticed marked fatigue on least exertion and in the morning when dressing. Two weeks ago her abdomen became distended with fluid to a marked degree, causing much dyspnea and distress generally. For past three weeks she has had diarrhea with indigestion after eating anything, and abdominal pains were frequent. Daily temperature was 102 to 103 for last two months. On April 19, 1926, she acted in a school play and had to be carried home after she had collapsed. During this time she had not rested at all during the day and had kept up her school work. The diagnosis of tuberculosis was not made until Dr. Turman was called to see her on April 22, 1926, when he advised immediate treatment.

Physical Examination—April 24, 1926, at my office, 9 A. M. Emaciated young colored girl. Dyspnea marked. Abdomen distended with fluid. Temperature 101½, pulse 140, respiration 26. Weight 80 pounds.

Lungs showed moist medium and coarse rales throughout left lung and in right upper lobe. B. B. and whispered pectoriloquy above second rib on left side.

Heart action was regular. No murmurs. Not enlarged.

Blood pressure was 105-70.

Abdomen was distended with fluid wave. Flatness over the lower half when sitting up, changing with position, and tympany above the flatness.

The cervical and inguinal glands were palpable.

Extremities were negative.

Urine was negative.

Blood examination showed: W. B. C., 9,000; differential: polys 66%, large lymphocytes, 12%; small lymphocytes, 20%; large mononuclears, 2%.

X-ray report (by Dr. E. L. Flanagan), May 8, 1926:

Right lung—Radiographic examination of the chest shows slight structural changes along the first intercostal branch, due to a number of small cottony deposits resembling tuberculous infiltration.

Left lung—There is an area of infiltration around the hilum about 1½ ins. in diameter; extending from this are seen the first and second intercostal branches well delineated, which show some cottony deposits along their distribution into the outer lung zone.

The heart is of normal contour and position. The diaphragm is smooth. The costo-phrenic and cardio-phrenic angles are clear.

The above findings indicate moderate infiltration of both upper lobes with tuberculosis of recent origin.

TREATMENT WITH PNEUMOPERITONEUM

Date	Amount of Fluid Removed	Amount of Air Injected
April 24, 1926	1000 c.c.	1500 c.c.
April 26, 1926	500 c.c.	900 c.c.
April 30, 1926	500 c.c.	200 c.c.

The same needle was used to remove the fluid and inject the air, with novocain.

A Loving pneumothorax apparatus was used to inject the air.

At each inflation the air was injected until the abdomen was dome-shaped and liver dullness was obliterated.

There were no unfavorable symptoms experienced by the patient after each inflation, and her breathing became much better immediately after removal of the fluid the first time.

After the third aspiration and inflation all fluid has disappeared and the air is being gradually absorbed.

PROGRESS NOTES

April 24, 1926—Referred for treatment. Came to my office walking at 9 A. M. Examination as above reported. Aspiration of 1000 c.c. peritoneal exudate and injection of 1500 c.c. of air through same needle by means of Loving pneumothorax apparatus. Novocain was used locally. No reaction. Put to bed for rest at home. Soft diet. Fresh air. Dilute hydrochloric acid, fifteen drops, after meals. Diarrhea marked, six watery stools daily with griping pains in abdomen. Indigestion after each meal. Temperature at 9 A. M., 101½, pulse 140, resp., 26.

April 26.—Visited patient in her home. Removed 500 c.c. fluid from peritoneum and injected 900 c.c. air. Stood the operation very well. No reaction. Diarrhea continues. Temp. 103, pulse 120, resp. 24.

April 28—Visited patient in her home. Not enough fluid to warrant removal today. Diarrhea continues. Indigestion less marked. Cough less. Temp. 104, pulse 120, resp. 24.

April 30—Visited patient in her home. Removed 500 c.c. peritoneal exudate and injected 200 c.c. air. Stood the operation very well. Cough better. Indigestion much better and diarrhea less. No pain in abdomen. Temp. 103, pulse 120, resp. 22.

May 2—Visited patient in her home. No diarrhea or abdominal pains. No fluid in abdomen. No indigestion after eating. Much brighter. Temp. 103, pulse 100, resp. 20.

May 4—Home visit. No diarrhea, indigestion, nor abdominal pains. No fluid. No cough. Temp. 102, pulse 100, resp. 18.

May 6—Home visit. No fluid. Twenty-four hour bed rest continued. Patient much brighter and feels better generally. No abdominal symptoms whatever. Temp. 100, pulse 96, resp. 18.

May 7—Patient was taken in automobile to Dr. Flanagan's office for X-ray of abdomen and chest. Stood trip well.

May 8—Home visit. No abdominal symptoms nor

fluid. Fewer rales in lungs. Slightly constipated. Menstrual period about due. Temp. 100, pulse 94, resp. 18.

May 10—Home visit. Feels much better. No symptoms of importance. No fluid. Temp. 100, pulse 92, resp. 18 at 4 P. M.

Comment

This is the first patient treated by this method in Richmond.

Due to the tuberculous disease in her lungs, she will have to continue the constant bed rest for an indefinite time.

The pneumoperitoneum treatment has entirely cleared up the tuberculous peritonitis and all of its symptoms which were causing so much distress before treatment was begun.

This method of treatment is considered the best for tuberculous peritonitis.

1100 West Franklin *Street*.

Discussion

Dr. Wyndham Blanton, *Richmond*:—Dr. Mercer's paper brings to mind three cases:

First, that of a young man with tubercular peritonitis and fluid in the abdomen, who was several times tapped and inflated with air. He left the hospital without improvement.

Second, a young woman who showed the same symptoms, and who was operated upon with the usual removal of the fluid and exposure of the viscera to air. It has now been two years and she is apparently well.

The last case is that of a man who was tapped for fluid in the abdomen, and six hours later died of hemorrhage into the peritoneum.

Dr. Lazarus Karp, *Richmond*:—I would like to ask Dr. Mercer two questions:

First: Did the patient have severe pain in her shoulders after the inflations?

Second: Would utra-violet ray produce the same results as pneumoperitoneum in this patient?

Dr. Nelson Mercer, *closing the discussion*:—I thank Dr. Blanton and Dr. Karp for their interest in this subject. In answer to Dr. Karp's question about pain in the shoulder, I am glad to say that the patient did not experience any unfavorable effects of the inflations, not even abdominal discomfort which so often occurs within the first twenty-four hours following the injections.

In regard to the use of ultra-violet ray in this patient, I do not believe that it would have been effective until after the fluid had been removed, and even then I doubt that it would have produced the same satisfactory results as the air inflations. Of course, ultra-violet ray is used extensively in treating the complications of tuberculosis, such as enteritis, bone and gland involvement, and in skin lesions, and recently it has been employed in treating laryngeal tuberculosis with good results.

THE SIGN OF THE SMILE

We are weary a-walking the highway of life.
We are fretted and flustered with worry and strife.
Let us drop by the wayside the heavy old load
And rest at the inn, in the turn of the road.
Let us tarry awhile at the sign of the smile.

—*Selected.*

REPORT ON SPUTUM EXAMINATIONS OF 1,425 CASES OF PULMONARY TUBERCULOSIS.

By R. CANNON ELEY, M. D.,
and
FRANK B. STAFFORD, M. D.,
Blue Ridge Sanatorium, Charlottesville, Va.

The object of this paper is to show the incidence of tubercle bacilli in the sputum of patients admitted to this institution with regard to the stage of the disease, and with a brief discussion of its significance. In reviewing these cases we were careful to exclude all those in which a positive diagnosis of pulmonary tuberculosis could not be made. Therefore, those regarded as non-tuberculous and "suspicious" are not considered in the following tabulation:

It is probably advisable to first state the method that is used in examining sputum of all patients that are admitted to Blue Ride Sanatorium, which is as follows: Routinely on admission three consecutive examinations are made from the sputum by the direct method, without any attempt at concentration, the Ziel-Neelson process being employed. The patient is given a container, and instructed as to just what is desired; this instruction consists in having the patient save the first sputum in the morning after waking. During the night while sleeping there is very little coughing and expectoration done usually, and by morning the secretions have collected in the bronchi in a more concentrated form. This is the best material for the examination and is most apt to contain the bacilli. The portion selected for the examination is the tiny "cheesy masses" or muco-purulent material mixed with or floating in the sputum. Smears made from blood streaked sputum or that obtained immediately following hemorrhage may give a positive examination, where prior to that it had been repeatedly negative. Now, if the routine examination of the three specimens taken on consecutive mornings should be negative, the concentration method is employed. This is as follows: The sputum is obtained in the same manner as described above, and to it is added 4-5 c.c. of 15 per cent sodium carbonate solution. Seventy per cent alcohol is added, a volume equal to the amount of sputum, and the final volume centrifugalized at a high speed for three hours. The fluid is poured off, and a smear made from the precipitate. This method of examination is of course more effi-

cient. Many cases who on direct examination were found to be negative showed the presence of bacilli the first time when the concentration method was used. Routine sputum examinations are made every two months on all patients, in addition to those done on admission and discharge.

In accordance with the classification accepted by the American Sanatorium Association (September, 1922), all pulmonary lesions are divided into three classes. They are: 1. minimal (incipient); 2. moderately advanced; 3. far advanced. Here we use this classification and the cases listed in the table below are based on it.

Minimal (Incipient): Slight lesion limited to a small part of one or both lungs. No serious tuberculous complications.

Moderately Advanced: A lesion of one or both lungs, more widely distributed than under minimal, the extent of which may vary, according to the severity of the disease, from the equivalent of one-third the volume of one lung to the equivalent volume of an entire lung, with little or no evidence of cavity formation. No serious tuberculous complications.

Far Advanced: A lesion more extensive than under moderately advanced, or definite evidence of cavity formation, or serious tuberculous complications. The X-ray findings are used in correlation with the physical signs in making these classifications.

In order to make a positive diagnosis, a full history, which includes possible hereditary tendencies, contact, exposure, etc., as well as the symptoms, is first taken. This is then followed by a thorough physical examination, X-ray examination, routine laboratory work, and any other examinations which may be indicated, such as basal metabolism, etc. Finally, after due consideration has been taken of the above findings, the diagnosis is made. By using this routine, we feel that the chances of error are minimized, and the best results obtained.

The *history* in cases of known or suspected tuberculosis should be carefully taken. This is, of course, a slow, tedious and laborious task, yet it is from this that we often glean the most important points. It should not only include the present symptoms, but should include all possible exposures since infancy and early childhood, for we now believe the primary infection largely occurs at this period, and its manifestations in later life are precipitated by other conditions that have lowered the resistance of the individual. The history is often the chief means in establishing the diagnosis, and especially is this true of the early cases. The physician is too anxious to think that the diagnosis rests on the physical signs, and is inclined to seek consultation, where a thorough study of the history would afford him sufficient information to establish a diagnosis. Furthermore, the prognosis cannot be made before the history, which includes the symptoms, is carefully studied to determine the clinical course of the disease.

The *physical examination* is equally important as the history, and should be executed in the most careful manner, inspection, palpation, percussion, and auscultation being used. There are many cases in which the physical findings alone will not justify a positive diagnosis, and it is in these cases that the history plays an important role. Briefly, the presence of moderately coarse moist rales heard during inspiration following expiration and cough in either apex above the second rib in front or the third dorsal spine behind means active tuberculosis until it can be proven due to some other cause.

The *X-ray* examination is often merely corroborative, yet it is of great value in those cases in which there is some hesitancy in making the diagnosis. In other cases, especially those in which the lesion is very deep, or the disease is in its exudative state, it will afford a means of diagnosis when all others fail.

Hence, we see that in order to make a positive diagnosis of pulmonary tuberculosis, all things must be considered, and not too much stress placed on any one. We feel that our report on the sputum examinations illustrates this point.

The following figures are the results obtained by studying 1,425 consecutive cases in which a positive diagnosis of pulmonary tuberculosis was made:

TABLE OF CASES

Class	Total Number Cases	Number Positive	Number Negative	Percentage Positive
Minimal (Incipient)	482	40	442	8.3%
Moderately Advanced	401	203	198	50. %
Far Advanced	542	451	91	83. %

The above percentages showing bacilli will not be found to be as high as those reported from other sanatoria, (Trudeau, N. Y., 1924, reports min. 30 per cent; mod. adv. 78 per cent; far adv. 93 per cent) which may be explained on this basis. First, our classification of the cases is strictly in accordance with that of the American Sanatorium Association (as specified above). Second, only those cases in which there is a reasonable chance of improvement are taken into this institution, care being exercised to exclude the hopelessly advanced. This is not the condition in some of the institutions where every class is received. The large number of cases classified as "Minimal Tuberculosis" illustrates this point. Hence, in a similar report of 1,425 cases, the percentage would be higher in the other institutions. By admitting only those cases that have a reasonable chance of improvement, we are able to do the most good to the greatest number. Whereas, if the sanatorium were filled with hopeless cases, the number of admissions would be greatly decreased, and many cases kept out who could have been restored to health and returned to their homes to lead a life of usefulness. The motive is truly altruistic, and not a selfish one. Longevity is obtained for the greatest number in this manner, at the expense of only a few.

It will be seen that these results well illustrate the fact that if a diagnosis of tuberculosis in its early stages is to be made, it must be made largely on the history, physical examination, and X-ray findings, for in these cases the sputum is usually negative. Never wait until the organism has been demonstrated in the sputum before making a positive diagnosis, for this delay only furthers the ravages of the disease. Even the far advanced cases often give a negative sputum on repeated examinations. This is well illustrated by one of our cases in which the history, physical, and X-ray examination all pointed to a far advanced condition, but it was necessary to make fourteen sputum examinations before the organism could be demonstrated. Krause states that the diagnosis of early tuberculosis must usually be made while the sputum is negative. This point cannot be emphasized too strongly. The presence of bacilli in the sputum bears the same relation to the case as does hemorrhage; namely, that the lesion is no longer confined to the interstitial tissues of the lung, but is now parenchymatous in location, and is producing some ulceration.

The practitioner is, of course, a busy man, and does not have time to execute all the laboratory tests on his patients that he would like. However, the medical profession has advanced to the point that practically every town or city in the State has an up-to-date laboratory that can easily make repeated sputum examinations. Furthermore, the State Board of Health will not only make these examinations free of charge, but will also furnish the containers for collecting the sputum. This requires very little time, and may be the real means of establishing the diagnosis at a time when the patient has a good opportunity for recovery. Is the patient not entitled to this consideration? The answer is obvious. Any patient having a cough or any expectoration lasting as much as four weeks and which does not respond to treatment, should be considered suspicious of tuberculosis, and a specimen of the sputum should be collected and examined for tubercle bacilli.

Recently a case was recited to us by a physician who had seen a case of suspected tuberculosis in consultation. A definite diagnosis of tuberculosis was made by the consultant, but the family physician, doubting this, began to send specimens of sputum to the laboratory for examination for tubercle bacilli. The first two specimens were reported negative, but the third was positive. The physician, still doubting the diagnosis, stated that the majority always ruled, and that the presence of two negative and one positive examination was in his estimation sufficient evidence that the patient did not have tuberculosis.

Conclusions: (1). Of 1,425 positive cases of pulmonary tuberculosis, only 44 per cent showed tubercle bacilli in the sputum. According to the stages of the disease they are as follows:

Far Advanced	83%
Moderately Advanced	50%
Minimal	8%

(2). Too much emphasis cannot be placed on *repeated* examinations of the sputum in any case where there is cough and expectoration persistent for more than four weeks.

(3). The presence of tubercle bacilli in the sputum is significant of a parenchymatous lesion, with ulceration, except in those cases

in which a caseous node ruptures through into a bronchus and expels the bacilli.

(4). In the presence of other evidence the diagnosis should not be postponed until tubercle bacilli appear in the sputum. *The earlier the diagnosis, the better the prognosis.*

(5). And, lastly, the diagnosis of tuberculosis may not rest on any one point, but a consideration of many. The history, if carefully taken and thoroughly studied, may be sufficient to diagnose the case early.

THE CAUSE AND TREATMENT OF URINARY CALCULI.*

By BLANTON P. SEWARD, M. D., Richmond, Va.
Instructor in Medicine, Medical College of Virginia.

A subject as comprehensive as "The Cause and Treatment of Urinary Calculi" can scarcely be treated adequately in the time allotted for this paper. The complex problems concerned in the causation of calculi have not been fully work out, although our knowledge of stone formation, still quit meagre, has been advanced by recent contributions. By applying this knowledge, we are more hopeful of reducing the occurrence of urinary calculi, and particularly, in diminishing the number of recurrences.

Since the day of Hippocrates much has been written upon the phenomenon of calculus formation. The fanciful ideas of the ancients and physicians of the Middle Ages have been superseded by the more or less speculative and unscientific theories of modern writers. Some of these theories inspired investigation, though the majority will be ranked among medical legends.

With the advent of genitourinary surgery as a specialty, more critical attention has been given the abnormal deposition and fusion of crystals into concretions. Theories formerly held as the cause of calculi are no longer tenable. In recent years the theories of infection and stasis have gained such widesprad popularity that they are considerd the chief causes of calculus formation in the biliary and urinary systems. Indeed, they are so popular we are likely to dismiss the subject without adducing further factors in stone formation. The thoughtful student is not satisfied with these hypotheses and he will endeavor to find other causes which seem more fundamental.

We cannot admit that infection and stasis are entirely satisfactory explanations of calculus formation. If infection is to bear the responsibility for the formation of calculi, we ought to find stones in practically every case of long standing infection in the urinary tract. Why do we not find them in all cases of tuberculosis of the kidney and in all cases of pyelitis? Actual experience shows that a stone in these conditions is a comparatively infrequent finding. If infection is the etiological factor, we should expect to find, as Cabot and Crabtree pointed out a larger number of females affected with calculi than males, for a larger number of women show urinary tract infection. But males are more often affected with calculi.

If stasis is the causative factor, we should expect to find stones in all cases in which there is any obstruction to the passage of urine from the kidney to the meatus. This would be true in cases of ureteral stricture and prostatic hypertrophy, for in both there occurs stasis, often with infection and decomposition of the urine. Such cases in which calculi are found are small in comparison with the number which have one or the other of the conditions. We would expect to find stone formation resulting from hydronephrosis, yet in considering the causes of hydronephrosis we think first of stone as the cause and not the result.

Infection and stasis may favor the causation of stone by intensifying the inflammation of an already malfunctioning kidney,[1] or by changing the reaction of the urine. The evidence, however, against infection or stasis as the cause of calculi in all cases is strong. The absence of a calculus in a majority of patients showing either infection or stasis, the occurrence of calculi in the new-born, the X-ray demonstration of a calculus in a person in whom the clinician did not suspect its existence, and finding a stone in sterile urine, raise the question whether there is not some more fundamental factor at work in bringing about stone formation. We know stones are frequently associated with infection when the patient comes under observation, but we are not willing to say the infection was the cause except in certain types of calculi the composition of which is revealed by chemical analysis and by a study of the urine. The urologist finds many more patients with infection and

*Read before the Richmond Academy of Medicine, March 23, 1926, also before the Southside Virginia Medical Association, at Farmville, June 8, 1926.

without stones than he finds with infection and stones. The inference to be drawn, therefore, is that infection and stasis are only contributing factors in the formation of stones, and, in particular cases, cause the stone forming mechanism to work to a better advantage.

In seeking the cause of calculus formation, it is logical to make a study of the solids dissolved in the urine and the hydrogen ion content of the urine. The formation of sediments, precipitates and concretions in the secretions of the body is due to a disturbance in the solubility of the dissolved substances. A knowledge of the laws of solubility is the starting point to the understanding of the mechanism of stone formation.

The urine normally is a supersaturated solution when compared with plain water. The solids dissolved in the urine—uric acid, urates, calcium oxalate, calcium carbonate, calcium phosphate, ammonium and magnesium phosphates, and less often cystin and xanthin, all of which may be constituents of calculi—are insoluble in water even within the range of the acidity or alkalinity of the urine. When these solids go into solution they dissociate into ions each bearing opposite electric charges. There is a limit to the degree of solubility of a solid in a liquid. The amount disolved is influenced by the temperature—the higher the temperature the greater the amount of solid going into solution. When the temperature is reduced the solvent may still hold the solute in solution. It is then spoken of as a supersaturated solution. A supersaturated solution is unstable. Most of the crystalline constituents of the urine are salts which dissociate into their ions carrying positive or negative charges. The acids are also dissociated; the hydrogen ion concentration thus derived determines the acidity of the urine. The dissociation takes place in stages and ultimately has a bearing on the hydrogen ions in concentration and the solubility of substances in the urine. The dissociated ions bear a definite relationship to the undissociated molecule. Near the saturation point the proportion of free ions is important for the addition of an excess on one side or the other will disturb the equilibrium and cause a precipitate.[1] Plainly speaking, the addition of a crystal to an already oversaturated solution will bring about a deposition of the excess crystals. While this is a law of the solubility of solids in water, more intricate factors are encountered in the urine; still, we can assume that a similar phenomenon takes place.

Factors governing the solubility of solids in the urine are the metabolism of substances which are precursors to those found in the urine; the reaction of the urine as determined by the hydrogen ion concentration; and the urinary colloids. As these factors determine the solubility of crystalloids, a derangement of one or more of them must be accountable for the formation of a calculus.

A normal metabolism protects against an excessive concentration of solids in the urine by eliminating a smaller amount in the feces. Excessive concentration of urinary solids may occur from eating large quantities of food which give rise to these solids, or from improper digestion and absorption from the gastro-intestinal tract with consequent poor assimilation by the body tissues.

Experimental feeding of animals with oxamid, a derivative of oxalic acid, increased visibly the deposit of crystalline material in the urine.[2] It is a known fact, also, that individuals have had one or more calculi after eating over a prolonged period foods having a large percentage of constitutents found in those calculi. Under a strain the tissues may no longer be able to metabolize those substances, an excessive amount occurs in the urine and, from a chemical standpoint, the addition of crystals to an oversaturated solution produces a precipitate. This may show only a transient presence of crystals, and a readjustment of the diet, if the patient can be seen in time, may prevent such a precipitation. Otherwise, excessive deposition has become more or less permanent, resulting in the formation of a concretion.

A change in the hydrogen ion content of the urine may lead to stone formation even in the absence of an excess of crystalloids. The calcium salts normally soluble in high acidity become insoluble as the acidity diminishes. Uric acid is more soluble in a weakly acid urine and is precipitated in a hyperacid urine. The phosphates are precipitated from an alkaline urine. The urine may be alkaline on account of ammonical decomposition due to bacteria. The normal hydrogen ion content of the twenty-four hour urine is given as Ph[6] to Ph.[7] The acidity increases as the lower figure is approached. The hydrogen ion con-

tent is more dependent upon the diet than any other single factor, being high on a meat diet and low on a vegetable diet.[3] The hydrogen ion content as influenced by diet, therefore, is important and may play a considerable part in the formation of calculi.

When we realize the large amount of solids normally excreted in the urine during the twenty-four hours, a total of approximately sixty grams, we wonder why stones do not form in the urinary tract of every individual. Nature has provided an ingenious mechanism for the protection against encrustations in the urinary channels by means of the colloids. The presence of the colloids gives the urine a greater solvent power, enabling it to hold larger quantities of crystalloids in solution.[4]

The delicately balanced colloidal mechanism may easily be disturbed by faulty metabolism or by tissue alteration in the urinary tract. Normal urine contains *no* irreversible colloids; hence, ordinary deposits are readily dissolved. In the presence of an excess of crystalloids or a foreign crystalloid, as oxalic acid, cystin, or xanthin, the colloids are overwhelmed and a deposit will occur, forming a nucleus for a calculus. Qualitative and quantitative changes may occur in the colloids with consequent stone formation. In some instances there may be specific stone-forming colloids at work. The recent work of Rosenow, in which he produced evidence of calculus formation with certain bacteria, indicates that specific bacteria produce specific stone-forming colloids. Inflammatory exudates may contain pathological colloids which, on entering the urine, will disturb the protective action of the normal colloids and lead to stone formation. Not every abnormal colloid introduced in the urine will cause crystalline deposit. If this were true every case of infection in the kidney or ureter would show a stone.

Aschoff and Kleinschmidt claim the majority of calculi begin as primary calculi, formed independently of inflammation, but from an excess of the main constituent of the calculus. Ransohoff, in corroborating their work, found primary calculi to consist of uric acid, urates of sodium and ammonium, calcium oxalate, cystin and xanthin, deposited without changes of an infectious nature. These investigators found secondary calculi composed chiefly of ammonium and magnesium phosphates, calcium phosphate and calcium carbonate, developing in the presence of infection. In other words, primary calculi are of non-bacterial origin, while secondary calculi are of bacterial origin.

Crystallization is dependent upon (1) a defective metabolism; and (2) an abnormal composition of the urine. In the urine there may be an excess of the substances normally held in solution, a diminution or absence of substances capable of holding others in solution, or a foreign substance acting as a precipitating agent; (3) changes in the hydrogen ion concentration due to an unbalanced diet, or ammoniacal fermentation; (4) qualitative or quantitative changes in the colloids. Merely finding a precipitate in the urine is not sufficient to assume the patient has a stone. An examination after an attack of renal colic may show "showers" of calcium oxalate crystals which may persist a short time and clear up. The explanation is that through a disturbance in one of the above factors the equilibrium between the solvent and the solute is upset and calcium crystals are deposited. Later, the equilibrium is re-established and no more crystals are found. Likewise, phosphatic deposits can occur but the acid tide of the urine may rise sufficiently high at some time in the twenty-four hours to re-dissolve all of the deposits.

Concretions apear to form according to a rather definite law.[4] There is always a nucleus upon which the crystals are deposited. The nucleus may be crystals from an over-saturated urine, massed cells or bacteria. Upon this nucleus substances crystallize out of solution in much the same manner that rock candy crystallizes about a string with the important exception that mucin is deposited. Mucin acts as the cementing substance, binding the crystals to the nucleus. The calculus thus begun increases in size as long as mucin is deposited to hold more crystals together. Calculi are admixtures of organic and inorganic material.[5] The most common constituents of calculi are uric acid, calcium oxalate and the phosphates.

Uric acid is a common, though probably not as often the predominating, constituent of calculi as was formerly thought.[6] Uric acid is difficult to hold in solution and is more soluble in a weakly acid medium. Formation of uric acid concretions then is favored by the high acidity of the urine, by increased ingestion of

proteins from which uric acid is derived, or by high percentage of acid phosphates which tend to lower the solubility of uric acid. Excessive catabolism of nucleated body cells, as in leucocytosis of inflammatory diseases and leukemias, increases uric acid formation.

Calcium is taken into the body in an inorganic form. Calcium is more soluble in acids. The amount absorbed depends upon the condition of the gastro-intestinal tract.[7] Calcium metabolism is well stablized; a large proportion of its salts is eliminated by the bowel. Consequently, feeding large doses of calcium or giving it intravenously does not increase to any extent the amount in the urine. Although adults possess a tendency to calcium equilibrium, individuals who have taken large quantities of milk and vegetables rich in calcium for a long time have shown calcium calculi. Calcium oxalate and calcium phosphate are difficult to hold in solution. A number of physical chemists, including Schaede, Bechhold, and Lichtwitz, claim that the colloids play a great part in holding these salts in solution. Lichtwitz showed that the extraction of colloidal material from the urine with benzin resulted in a precipitate of the phosphates and that when dialyzing the urine against water the urinary crystalloids passed into the water and precipitated. The precipitate consisted chiefly of calcium oxalate.

Authorities state that the oxalate in the urine is derived from an imperfect metabolism of oxalic acid. The excess oxalic acid is thought to be due to an incomplete oxidation of carbohydrates, or to fermentation of the carbohydrates in the gastro-intestinal tract. The acidity of the gastric juice is a factor in calcium metabolism. The exogenous source of oxalic acid depends upon the ingestion of certain foods rich in calcium, such as cabbage, rhubarb, tomatoes, beet-root, French beans, asparagus, strawberries and figs. Ord found certain forms of calcium oxalate crystals tended to remain isolated, while others tended to coalesce. In the non-coalescent type the crystals may be deposited but no concretions form, while the coalescent type may readily form stones.[2] Clinically, we are unable to distinguish between the two varieties.

Phosphorus is taken into the body in the forms of phosphoric acid and phosphates, and exists in the body as salts and esters of orthophosphoric acid. The extent of absorption depends upon the reaction of the gastro-intestinal tract and the concentration of calcium and magnesium ions present.[7] Phosphorus is excreted as phosphates. Phosphoric acid plays a large part in maintaining the acid reaction of the urine. The disodium phosphate is taken from the blood by the kidneys and is changed into monosodium phosphate which dissociates and gives the urine its acid reaction.

Precipitation of the phosphates, calcium carbonate and ammonium urates occurs in neutral or alkaline urine. The alkalinity may be due to bacterial decomposition. This is the most frequent cause of deposits in urine which has stood after voiding.

Phosphaturia in the absence of an infection, is probably a metabolic disturbance. Fixation of alkalies in the body or increased loss of alkalies may produce it. Ammonia may be split off from the urea immediately after excretion by the kidneys, rendering the urine alkaline as in the case of an alkaline urine produced on a prolonged meat diet without administration of alkalies. Depletion of chloride ions from constant vomiting or gastric anacidity may give rise to phosphaturia. A person may not empty the bladder promptly after it has filled, and calcium carbonate may be precipitated with fusion of the crystals.

Cystin calculi are very rare and of much interest. Cystin occurs in the protein molecule along with other amino acids. Its presence in the urine is significant of imperfect protein metabolism. Where the error lies is not known, though it is thought to be due to defective catabolism. Alkaptonuria and cystinuria have been found existing simultaneously. Wolff, Osterberg, Shaffer and Somagyi found other anomalies in these urines, such as low ammonium, high nitrogen and high neutral sulphur.[7]

Has the physio-chemical basis of stone formation a practical application in therapeusis? In the present state of our knowledge we cannot say how much may be accomplished. Working on this basis, however, and at the same time not overlooking any associated infection or any other possible contributing element, we believe a great step forward will be made in averting the formation of a primary calculus in conditions believed to be precursors of calculi and in preventing recurrences in patients who have had calculi. Since the conventional methods of treating lithiasis

have proved inefficacious, our attention is forcibly brought to the necessity of revising our therapeutics, and a revision in the direction herein indicated would appear to offer some prospect of happier results.

The most important phase of this treatment is prophylaxis, which should endeavor (1) to prevent precipitation of crystals from the urine; (2) to prevent a concretion forming when crystallization has occurred by removing the crystals as quickly as possible; and (3) to prevent the necessary binding substance from being present.[8]

The *prophylactic treatment* requires a knowledge of the composition of the stone in the patient who has already exhibited a calculus, and of the urinary precipitate in the patient who, though not yet the producer of an actual calculus, is apparently presenting a diathesis likely to eventuate in stone formation. This knowledge may be acquired by studying the crystals found in the urine; by a chemical analysis of the stone if voided or removed by operation; and by determining the hydrogen ion concentration of the urine. Presuming that these essential data have been obtained, further consideration of the question of prophylactic therapeutics will be found to be concerned chiefly with the matter of diet and drugs. As the acidity of the urine is dependent on the diet and as the foods ingested must be metabolized and excreted, therefore, the diet will receive the greatest consideration. Medicinal agents will prove of secondary importance but are entitled to some attention.

The dietetic indications in *uric acid calculi* are for a mixed diet with a preponderance of vegetables, fats and carbohydrates and low proteins.[7] Such a diet will tend to prevent the urine from becoming too acid and at the same time obviate an excess of uric acid in the urine. Sweetbreads, kidneys, brains, liver, and fish-roe are especially rich in nucleic acid from which the purin bodies are derived and should be prohibited. Spinach, green peas and beans should not be given for the same reason. The diet may consist of cereals, cream, milk, whey, butter, cheese, eggs, gruels, meat soups, cheese souffle and Welsh rabbit, vegetable soups and salads, macaroni, rice, hominy, tomatoes, rhubarb, corn, cabbage, cauliflower, asparagus, carrots, parsnips, potatoes, turnips, squash, celery, honey, tapioca, syrup, buckwheat cakes, wheat bread, cornbread, toast, Graham crackers, fresh or preserved fruits and the usual nuts.

After the patient has been on a purin-free diet for several months, a limited amount of white meat may be given at the midday meal two or three times a week. Later, the meat days per week may be slowly increased. It is well to remember that broiled or roasted meat increases the uric acid output more than boiled meat, for in boiling purins are extracted.[9] Hence, an individual with uric-acid diathesis should eat meat prepared by boiling, and then not more than 70 grams may be taken.

The protein-low diet should not be abandoned even though the patient is not exceeding the uric-acid tolerance on the amount of meat allowed.

Medicinally, alkalies are useful in diminishing the urinary acidity and occasional doses should be given, especially if the acidity increases.

Oxaluria, phosphaturia, and cystinuria may be precursors of calcium, phosphatic and cystin calculi and must be considered in the treatment of these types of calculi. While there are no statistics to show the frequency of stones in these conditions, we must regard persons showing one of them as potential stone patients, and subject them to the same prophylactic treatment. Phosphaturia, however, has less significance than the other two, but where it persists it is an abnormality.

Oxaluria and Calcium Calculi.—In prescribing a diet low in calcium we should increase the food that will produce high urinary acidity. Peas, lettuce, rice, cauliflower, carrots, wheat, oatmeal, corn flakes, eggs, milk, fish, oysters, bacon, ham, chops, steaks, fowl, stale bread, or toast and fruits, except those with high calcium content mentioned above, will be useful. Plums, prunes, and cranberries are especially good for increasing the acidity. Milk and eggs should be taken in moderate quantity. The diet should be low in carbohydrates and fats to prevent fermentation. In treating oxaluria we must pay proper attention to the gastro-intestinal tract as well as to the condition of the urine.

Medicinally, hydrochloric acid or nitrohydrochloric acid should be employed, though the acid should not be continued too long as the high acidity and increased meat ingestion may bring about precipitation of other crystals. Sodium phosphate is said to have a tend-

ency to hold calcium in solution in the urine. If constipation exists it will be useful in two ways.

Phosphaturia and Phosphatic Calculi.—In all cases of phosphaturia a correct diagnosis of the cause must be made or the treatment will be unsatisfactory. When the phosphaturia is of an exogenous source the dietary will play a large part in changing the urine from an alkaline to an acid reaction. We may allow the sea foods, meat, milk and eggs in small quantities, thus holding the protein intake to a minimum. A large carbohydrate allowance should make up the balance of the diet. Cereals, cream, whole wheat bread, rice, crackers, all vegetables, all fruits and the ordinary nuts should be eaten freely. Alkalies and alkaline waters must be prohibited.

When of endogenous origin, manifestly the diet will be of little importance. The general considerations of the patient as to curtailment of wear and tear to which he has been subjected, and instructions for a greater amount of rest must be given. As phosphaturia may occur in neurotic persons, the psychic element must be considered. All digestive disturbances must receive proper treatment.

Medicinally, the urine should be acidified by the aid of mineral acids. Sulphuric acid in the form of sulphuric acid lemonade, ten to fifteen drops of the acid in sweetened water, is prescribed by some clinicians. Sodium acid phosphate in large doses is prescribed. The benzoates and benzoic acid may counteract the alkalinity and, in the presence of infection, may exert an antiseptic action. Van Noorden administered Mist. Creta grs. xv-xxx, two or three times daily, to aid elimination of phosphates by the bowels.[9]

As phosphatic calculi are usually secondary, the result of infection, the infection in any part of the urinary tract must be treated. This type of calculus is more frequently found in the bladder, but it may also be found in the renal pelvis.

For cystinuria and cystin calculi, an alkaline urine is necessary. The individual should eat sparingly of proteins. The meat proteins particularly should be interdicted. Looney, Burgland, and Graves found that eggs added to the dietary increased the cystin excreted by patients with cystinuria.[10] The dietary may consist of cereals, cream, butter, one or two glasses of milk, two or three slices of bread, one piece of breakfast bacon, vegetables, except spinach, green peas and beans, vegetable soups and salads, honey, tapioca and nuts, and fruits, except plums, prunes and cranberries. An alkali should be given daily, and, later, three or four days a week. Cystin is more freely soluble in ammonia than other alkalies, hence; ammonium carbonate is the drug of preference.

We do not believe the constituents of the various mineral and lithia waters, much vaunted in the past, have any special action in preventing stone formation. The psychic effect produced on the patient causes him to drink large quantities of water when an equal amount of ordinary water will probably do as much good. Distilled water was recommended by Ochsner and others. It may be efficacious in localities where hard water prevails, but in this section we do not know of any particular value to be derived from its use. Patients showing crystals in their urine, or who have had a calculus, should drink large quantities of water to dilute the urine and flush out the urinary tract.

Can a calculus be dissolved after it has formed? We are unable to answer this question. If the nature of the stone can be ascertained, the institution of proper corrective measures may limit its growth. By limiting or preventing irritation by the stone, thereby reducing the production of mucin, the growth of the stone may be halted. If the mucin already in the stone could be dissolved, the stone itself would fall to pieces. A purely crystalloid stone, which is a type rarely seen, may redissolve, but the mixed variety, composed of colloids and crystalloids, presents a difficult problem in that the colloids are irreversible and prevent redissolving. When we learn more about the colloids, greater light will be thrown upon this question.

Conclusions

1. The basis of calculus formation in the urinary tract is probably physio-chemical. The factors concerned in the formation are (1) faulty metabolism; (2) a change in the hydrogen ion concentration of the urine; (3) disturbance in the colloidal mechanism.

2. Infection and stasis are probably only occasionally of primary importance and are usually contributing factors in calculus formation. They favor the stone forming mechanism (1) by changing the reaction of the

urine; (2) by the bacteria serving as a nucleus.

3. Therapeusis is concerned chiefly with the prevention of the reformation of calculi; or of the development of calculi in individuals exhibiting a stone diathesis. The treatment consists in correcting anatomical and metabolic irregularities, and clearing up infection where it exists.

BIBLIOGRAPHY.

1. Spitzer, Wm. M., and Hillkowitz, Philip: The Cause of Stone in the Urinary Tract. *Journal of Urology*, 1924, XI, 327.
2. Keyser, L. D.: The Mechanism of the Formation of Urinary Calculi; *Annals of Surgery*, Feb., 1923, page 210.
3. Hawk, P. B.: Physiological Chemistry, Philadelphia, Blakiston, 1917, 390.
4. Wells, H. S.: Chemical Pathology, Philadelphia, Saunders, 1920, 452.
5. McCallum, W. G.: Textbook of Pathology, Philadelphia. Saunders, 1917, 428.
6. Kahn, M.: A Study of the Chemistry of Renal Calculi, *Archives Internal Medicine*, 1913, XI, 92.
7. Barker, L. F.: Endocrinology and Metabolism, New York, Appleton, 1922, IV, 515.
8. Musser, J. H., and Kelley, O. A. J.: Practical Treatment, Philadelphia, Saunders, 1912, III, 679.
9. Forshheimer, Frederick: Therapeusis of Internal Diseases, New York, Appleton, 1924, IV, 339.
10. Looney, J. M., and Burgland, H., Graves, R. C.: A Study of Several Cases of Cystinuria, *Jour. Biol. Chem.*, 1923, 57, 515.

Stuart Circle Hospital.

SOME CONSIDERATIONS REGARDING PROSTATISM.*

By R. M. LeCOMTE, M. D., Washington, D. C.

In casting about for a subject on which to base my remarks for this occasion, I was rather perplexed to find one that would hold an interest for all of you. During the summer, I talked with three active Washington physicians and these conversations led me to believe that I might present to you a study of some of the aspects of what we call prostatism or enlargement or hypertrophy of the prostate gland. The first conversation was with a general surgeon who told me that he removed every bit of glandular tissue from the prostatic capsule when he did a suprapubic prostatectomy; the second was with an urologist who had no doubt but what every prostatic adenoma sprung from the lobes of the preformed adult prostate gland; and the third was with a very keen internist who said that he believed both of these statements to be true.

The opinions of these three active and intelligent medical men were at variance with the ideas that I had long held on the possibility of removing the prostate entirely and also as regards the origin of prostatic adenomata, so that I began to wonder whether or not I myself might not be wrong. Accordingly, I reviewed my notes, worked for a while in the Library of the Surgeon-General, decided that I had been right in the first place, and concluded to use this work as a part of the material for my Presidential Address to you.

By prostatism is meant the symptom complex which develops as the result of obstruction to the outflow of bladder urine, due to changes in the prostatic urethra. Clinically, it is characterized at its inception by frequency of urination, mainly at night, without retention; later, there is added to this incomplete bladder retention with perhaps periods of acute complete retention; finally, complete retention supervenes and catheterization is necessary. Various complications, mechanical and infective, occur during the course of the disease. Pathologically, the obstructing masses consist of tumors in or about the prostatic urethra and presenting the cytology and morphology of prostatic tissues; they range from a purely glandular to purely fibrous masses in the benign type; the malignant type is a characterisic adeno-carcinoma. In 100 prostates examined, Albarran and Halle (*Ann. des. Mal. des Org. Gen-Urin.*, 1900, 18, 112) classified the types found as follows:

Purely glandular	32
Mixed fibrous and glandular	51
Purely fibrous	3
Adeno-carcinomata	14

Of the fourteen malignant tumors, the malignancy had not been suspected either clinically or from the naked eye appearance in eight.

Prostatism is of relatively frequent occurence after the age of fifty years. Motz and Perearnau found the adenomata that comprise the essential lesion of benign prostatism in thirty of fifty-nine prostates obtained postmortem from subjects over fifty years in whom the prostatic disease was apparently not operative in producing death. We find it occasionally, apparently in a latent form, in the routine examination of men suffering from

*Read before the Washington Medical and Surgical Society, October 27, 1924.

other genito-urinary disorders. In the first 1,000 genito-urinary histories that I have, it was noted in 50 instances (5 per cent not corrected for age or sex), but only sufficiently well marked to require operation in 13 (26 per cent).

Anatomy

In the adult, the prostate is perhaps best described as a collection of simple and branched tubules with dilated extremities embedded in a fibro-muscular stroma.

With the subject in the erect posture, the apex of the organ is directed downwards and the base upwards so that the prostatic urethra has an almost vertical course. This may seem self-evident when one looks at the sagittal section, but it is not so well appreciated in the clincal examination with the patient bent forwards, on his back, or in the exaggeraten lithotomy position.

The urethra and ejaculatory ducts traverse the prostate, dividing it into the different lobes that are described. The urethra enters at about the center of the superior surface and passes out at the apex. The ejaculatory ducts enter at the junction of the superior and posterior surfaces, in the longitudinal groove which is present on the latter, and pass in a straight line to the posterior wall of the urethra at about its mid-point, each discharging by a separate opening at the colliculus seminalis. The portion of the gland lying in the acute angle between the ejaculatory ducts and the urethra is termed the median lobe; its ducts empty into the urethra proximal to the colliculus. That portion lying behind the urethra and the ejaculatory ducts, in the obtuse angle formed by their junction, is called the posterior lobe or commissure; when present, its ducts empty into the urethra distal to the colliculus. On each side of and anterior to the urethra are the lateral lobes; their ducts empty into the urethra at the sides of the colliculus and they form the main mass of the prostate. The anterior lobe may appear between the two lateral lobes in front of the urethra, or may, and generally does, fail entirely; when present, the ducts empty onto the anterior wall of the urethra.

The stroma of the gland consists of fibro-muscular tissue. The muscular fibres are generally of the smooth variety, but in the apex in the region of the external urinary sphincter striated fibres are present. The gland has a fibro-elastic tissue capsule which is distinct from but intimately adherent to both the stroma of the gland and the surrounding muscular and fibrous tissues, notably the pelvic fascia, rectum, and the levator ani and external urinary sphincter muscles.

Embryology

About the third month of foetal life, several groups of epithelial buds appear as off-shoots from the urethra or urogenital sinus in the region of the openings of the Mullerian and Wolffian ducts; they penetrate into the mesoderm at that point. Detailed embryological studies show that there are at least five of these groups present, one for each of the five lobes described for the adult gland. Lowsley (*Amer. Jour. Anat.*, 1912, xiii, 3, July, 338) has demonstrated that they all persist until birth. The group for the anterior lobe must

generally disappear between birth and adult life for it is exceptional to find it in the adult gland. That the group for the posterior lobe persists after birth and remains in the adult gland as a separate group having their own excretory tubules is open to question. It is probable that the tubules of the posterior lobe are not constant but that they are present in the majority of adult glands. Lowsley was able to demonstrate in the foetus rudimentary periurethral glands corresponding to those described by others in the adult gland.

But little is known of the changes that occur in these prostatic glands between birth and puberty. Such work has apparently not in-

terested anatomists and urologists much for scarcely anything has been written upon it. So far, I have been able to find only two descriptions of detailed studies of the morphology of the gland, both done in new-born infants. Like other sexual glands, it must have a rather definite metamorphosis during this period of sexual ripening. Castration in infancy or early in childhood leads to an aplasia or atrophy of it.

The first point that I wish to take up is that of the possibility of complete removal of the prostate. This can be done by an operation, either suprapubic or perineal, in which the urethra is cut across and the attachments of the gland capsule to the surrounding soft parts is severed; it cannot be done safely by finger dissection and is only done for adenocarcinoma. In the suprapubic enucleation of benign growths, the usual procedure is to cut or scratch through the bladder or urethral mucosa with the finger, establish a line of cleavage between the tumor and the capsule and enucleate as much tisssue as is possible without tearing the capsule itself. This gives the impression that the entire prostate has been removed. That this is not true is shown by the fact that rectal examination after prostatectomy reveals a very definite prostate of normal size. In 1904, Cuthbert S. Wallace (Pathological Society Transactions, London, 1904, 55, 255) showed that glandular prostatic tissue remained in the capsule after the enucleation operation, and that what Freyer had called a total prostatectomy was in reality only a partial removal of the gland. Later, Freudenberg (*Verhandl. d. Deutsch. Gesellsch. f. Urolg.*, 1909, ii, April, 475) reported the findings on microscopic examination of the wound bed in three cases that had died soon after operation.. In each of these, the colliculus seminalis was present and glandular prostatic tissue was discernible in the capsule of the prostate left after operation. He concluded that a total prostatectomy was impossible.

An understanding of what I believe to be the genesis of the tumors that make up the enlargement in benign prostatism depends on recognition of the work of Albarran and Motz (*Ann. des Mal. des Org. Gen.-Urin.*, 1902, 20, 769). Their studies showed that the prostatic glands were divided into two groups, a central and a peripheral one, separated by a more or less well-defined muscle layer which they termed the intraprostatic sphincter. The central group lies immediately beneath the urethral mucosa, along the entire length and circumference of that tube. They are best developed on the posterior wall where they form two main collections, one at the level of the colliculus, termed the submontanal group, the other, encroaching upon the urethra or vesical neck, between it and the mucosa, and termed the subcervical group. The peripheral group makes up the prostate proper, forming an almost complete girdle of the urethra and central glands in the middle of the region but being deficient anteriorly at the vesical neck and at the apex.

A critical study of the literature and illustrations of the glands in the prostatic urethra impresses one that the different glandular groups described by Rokitanski (1861), Henle (1873), von Jores (1894), and Ribbert all really fall into the category of the group now commonly referred to as the central glands of Albarran. Such differences as occur in the descriptions and illustrations may very well have been due to individual differences in the specimens examined. The latest authors to take up this point, Tandler and Zuckerkandl (*Studien zur Anatomie und Klinik der Prostatahypertrophie*, Berlin, 1922) apparently consider all central glands as rudimentary prostatic glands.

The view that the intraprostatic muscular tissue described by Albarran and Motz is really a part of the sphincter mechanism of the bladder has received affirmative support by recent X-ray studies of the posterior urethra by Burden (*Surg., Gynec., & Obstet.*, 1924, xxxviii, 3, March, 403). He found that the X-ray shadow of the posterior urethra was always just a narrow strip and could only be obtained by making an exposure while opaque fluid was flowing through it, and that, in normal individuals, no funneling of the prostatic urethra occurred when the bladder was overdistended and the desire to urinate was imperious. These studies indicate that the muscles of the prostate have a function in retaining urine in the bladder and that the time-honored idea that the internal sphincter relaxed, making a funnel of the posterior urethra when the bladder was over-distended, is not correct. Funneling was only obtained in some cases studied after prostatectomy when it was

reasonable to suppose that there would be some disturbance of the internal urinary sphincter.

In 1905, Motz and Perearnau (*Ann. des Mal. des Org. Gen.-Urin*, 1905, 23-2, 1561) reached the conclusion that hypertrophy of the prostate was produced only from the peripheral glands and the stroma which surrounded them, and that the prostate proper (the peripheral glands) took no part in the formation of the neoplastic masses, but were pushed to the side and backwards. This statement seems to have been justified by the specimens which they illustrated. Other workers (Marquis, Lendorf, Marion, Papin and Verliac) soon confirmed this idea. Tandler and Zuckerkandl, who formerly stated that the adenomata developed from the preformed median lobe exclusively, now state they think that the origin is in the rudimentary prostatic glands lying between the colliculus seminalis and the bladder neck; they state that the rudimentary glands which they describe differ from the central group described by Albarran and others, but do not present convincing evidence of the difference. From the prostatic urethra, the tumor masses develop upwards and forwards, either extending through the orifice of the internal sphincter, forming an intravesical tumor and deforming the normally dimple-like internal urethra orifice, or, pushing the internal sphincter before them, elevate the entire bladder floor without any marked distortion of the internal urethral orifice.

On anatomic grounds it would seem fairly certain that the adenomata spring from the central glands of Albarran rather than from the peripheral group which constitute the main mass of the adult prostate gland. Other findings, which are so much a matter of common knowledge and observation that they need not be considered in detail also support this view. Thus, it is a matter of common observation that the large purely glandular tumors are the ones most easily enucleated. This would hardly be true if, to gain access to them, the finger had to penetrate through a layer of fibro-muscular tissue, as it would have to, did the tumors arise in the peripheral group of glands. In post-mortem examinations, and it is only in such that an adequate idea of the exact relationships of the tumors can be gained, the ejaculatory ducts are never found involved in the new formations; they are not removed in the enucleation, as is shown both by post-mortem examinations and by the fact that the sexual function is not disturbed by the operation in men sexually active previously. If the tumors were to arise from the prostate itself, the ejaculatory ducts would seldom be spared either in the growth of the tumor or in the enucleation. Recurrence after operation is very rare; it is more common after the conservative perineal operation, in which endeavor is made to preserve the urethra, than it is after a suprapubic enucleation. In the latter the urethra above the colliculus is almost invariably removed with the tumor, either by accident or design, thus taking away what we consider to be the tumor forming glands. The pathologic lobes always grow towards the urethra and never towards the rectum, a circumstance which we would expect to occur at least once in a while did the new formation originate in the peripheral parts of the gland. It is not logical to state that the preformed adult prostate can never give rise to adenomata, but it is rational to say that it seldom does and that an instance in which it has has never been completely demonstrated.

Motz & Perearnau (1905)
Intra-prostatic Sphincter surrounding the New-formed Masses.

The importance of this question of origin runs in connection with the type of operation that is advisable to cope with the disease. Recurrence is not sufficiently frequent to determine this point. If the tumor is intravesical, there is no question but what the suprapubic route is the logical one; even the most enthusiastic advocates of perineal prostatectomy advocate and practice suprapubic operation for vesical tumors near the trigone and for plastic operations on the neck of the bladder in the male. When the tumor is subvesical, the perineal route may be urged on the basis that a

rapid dilatation of the internal vesical sphincter will injure some of its fibres and cause urinary incontinence. That this is a sufficient reason for the perineal operation is doubtful, for, in it, muscles that are much more important at the apex of the gland are invariably torn and frequently give rise to some permanent dribbling. Ideal conditions would make a one stage suprapubic operation advisable so that the prostatic urethra down to the ejaculatory ducts could be removed under visual control; however, we seldom meet ideal conditions in old men suffering from prostatism, and generally have to content ourselves with a blind enucleation, which usually gives satisfactory results, after our patient has been prepared by more or less prolonged suprapubic drainage. The same effects may be obtained by intermittent or continuous catheterization when this can be maintained. There are objections to it, however, in that the urethra is traumatized, and infection may be increased and thus defeat some of its aims.

Another feature that I wish to take up with you is the importance of having a microscopic study of all prostatic specimens removed. During the summer I removed an adenoma weighing about twenty-three grains and only about 1.5 cm. in length, but which was situated just back of the urethral orifice where it would give a maximum of trouble. Clinically, the case, although in complete retention, would not make one suspicious of a malignant prostate and the gross specimen would not make one think of cancer. Microscopic examination showed a carcinoma in an adenoma. This might make us conclude that the carcinoma developed from the adenoma but we cannot be sure of that for it may have originated in the posterior lobe, as it usually does, and have then infiltrated the adenoma. Geraghty (*J. H. Hosp. Rep.* 1906, 13) found that, while thirty-eight of fifty prostatic carcinomata that he examined were also adenomatous, in all but one of these the posterior lobe was cancerous too. Any operation which leaves the posterior lobe in place will not prevent cancer from developing later.

Washington Medical Building.

"Father fell upon the ice
Because he could not stand;
Father saw the Stars and Stripes
We saw our Father-land."

—*Selected.*

"COME OVER INTO OUR VILLAGE AND HELP US."

By A. B. GRUBB, M. D., Cripple Creek, Va.

Two thousand years ago St. Paul received an urgent appeal to "come over into Macedonia and help us" and I believe he responded to the call.

Just now in the small towns, the villages and rural communities of Virginia there is a Macedonian cry to the physicians of our cities (where there are more than necessary) "to come over and help us."

There are about two thousand five hundred physicians in Virginia, many of whom are specialists, and this number can easily do all the practice in Virginia but they should scatter out. Virginia does not suffer from a shortage of physicians, but from a lack of equal distribution. The State Board of Health has done valuable service in showing the counties lacking medical service, and both our State schools should actually help locate their young graduates where they are most needed. For instance, Richmond, Norfolk, Roanoke, Petersburg, and Portsmouth could do on say three hundred and fifty doctors less than they now have. These, if located in some of our rural districts, could render a greater public service, could themselves be happier, could live cheaper, and in short could solve the bread and butter question more easily, enjoy more fresh air, the open spaces and have more prestige, etc.

Their children could grow up with less danger from street accidents, tubercular infection, and probably other infectious diseases. In some communities there is a chance for a doctor to have immediately a population of fifteen hundred or more to draw from and he may not have over three hundred to draw from in his city practice.

It is possible for him to have in his new location from forty-five to one hunded obstetrical cases, a few lobar pneumonias, many abscesses, few toxic goiters, several bronchial pneumonias, one hundred cases of diarrhea in small children, several acute abdomens, and hundreds of grippes, colds, all in one year. So he will possibly see three times as many patients who are actually sick as he has been accustomed to in his urban practice. Then too, he will become more versatile, have a richer clinical experience, have greater self-confidence and poise than his city brothers.

There is in every real medical student an innate desire to be of real service, to administer to those who are actually sick, and to be placed where his skill is needed. To find this place a village or town distant from the railroad is the ideal spot. The next best place is a small railroad town, then a town of two thousand, and finally, Richmond with her four hundred doctors already located would appear to offer the poorest opportunity for every young graduate. And yet, an "insidious propaganda" is put before young graduates to induce them to locate there, and in other already overcrowded cities. This "propaganda" runs as follows: "You are brilliant, you have a wonderful personality, you have social charm, there is always room on the top, Dr. Doe is fifty-five and will soon drop out and you can replace him." The young graduate is very susceptible to flattery and (unlike the chiropractor) has not been trained in college where to locate and many other things about the business of medicine. He is just as apt to locate in a place with a physician to every four hundred people as in one with one to every two thousand. There he expects to get on the top and stay. Once located his bull dog tenacity holds firm. He soon has a few admirers. To leave them would seem like defeat, so it would be better for him to be properly located at first. A member of the faculty should advise him or else each school should have a "chair on location" of graduates.

While this article has mostly had to do with the general practitioner, yet the same opportunity for specialists to find lucrative fields exists. A circuit of villages can be visited at regular intervals and they too can widen their horizon by seeing more who actually need them than by remaining cooped up in their city offices meeting stiff competition.

When even the head surgeon of a great hospital dies his associate steps in and fills his place. The leading physician of a great city passes and there are several ready to take his place. Trained technicians often take the place of medical graduates who work in laboratories and other special fields, but when the country doctor passes no one is ready to fill his place and thus a whole community suffers.

So, while I have not endeavored to show to my urban readers that a pot of gold exists at the end of the rainbow, yet a golden opportunity for service does exist and he who chases this will not be disappointed.

OCCASIONAL CAUSES OF FAILURE IN REGIONAL ANESTHESIA FOR HERNIA OPERATIONS.

By EDWARD M. HANRAHAN, Jr., M. D., Baltimore, Md.

It may be taken for granted, I believe, that with ideal regional anesthesia, hernia operations may be performed quite as satisfactorily as under general anesthesia. Nevertheless, there are several factors which, when not provided for, reduce an anesthesia from the ideal to the level of the satisfactory; and a merely satisfactory anesthesia is actually very unsatisfactory, both for the patient and the operator. By ideal anesthesia I mean the condition obtained when the patient is mentally composed and confident in the method and the operator; the muscles relaxed to a degree unknown with ether,—a relaxation comparable to that seen in the fresh cadaver. With the anesthesia often described as "satisfactory," the patient may be nervous and apprehensive, unable to discriminate between pain and touch, with his muscles reacting defensively against trauma. No wonder that operators who know only the latter anesthesia are dissatisfied with the method! And, furthermore, is not this the real explanation of the wide variation in opinion regarding its efficacy?

It is not my purpose in this paper to cite the advantages, both to patient and operator, of local over general anesthesia. It is sufficient to say that in many ways the successful use of local anesthesia is for the best interest of the patient. The only possible objection is that the operator's time is encroached upon, particularly if he makes his own injections. Finsterer, in Vienna, an ardent advocate of local, has for several years refused to operate on patients who insist on general anesthesia; his reasons being that his large experience with local anesthesia has accustomed him to a slow, careful and painstaking technique, the use of which would make an ether anesthesia too prolonged. But it is quite obvious that this meticulous work is decidedly to the patient's advantage when the ether hazard is eliminated. Not infrequently surgeons, unaccustomed to and not in favor of local anesthesia, find themselves in a position where it must be used. Their instrumentarium is liable to be

insufficient, their technique awkward. And yet they are too apt to blame their failures on the method rather than on their own misuse of it. Ideal local anesthesia is obtained only by the surgeon who seriously desires to utilize every possible means of inducing and augumenting an accurate novocain injection.

Among the factors which, when neglected, reduce, and, when considered, increase, the efficacy of local anesthesia, are: the mental attitude of the patient, the proper equipment of syringes and needles, an accurate knowledge of nerve distribution, and a modified operative technique.

The attitude of the patient is necessarily based on either hearsay evidence or previous experiences with either local or general anesthesia. I usually find that a previous experience with ether renders the suggestion of local anesthesia very welcome. It is noticeable, too, that the number of patients who ask for local anesthesia is increasing, probably because this method is being used more frequently and with greater skill. Again, without any preconceived idea, the attitude of the patient is colored directly by that of the surgeon. Farr's statement is very true, that a patient who has sufficient confidence in a surgeon to be operated upon, certainly will be found to have equal confidence in his choice of anesthesia. But, when once a decision has been arrived at, there must be no half-way measures. If local anesthesia has been chosen, the surgeon will attempt to satisfy the patient's needs at every point of contact. The hospital staff of assistants, nurses and attendants must co-operate in his strict observance of detail. Nothing should be omitted which would serve to promote the patient's comfort and well-being. The confident patient has better control of himself and his interpretation of sensations is more reliable. He does not interpret as pain the various types of paraesthesia often encountered.

Preliminary medication is important only in nervous or excitable patients. Drugs should never be given with the idea of controlling pain during the operation. If this becomes necessary, the technique has been faulty. The giving of morphia (gr. 1/6) or pantopon (gr. 1/3) with scopolamin (gr. 1/300) an hour before the operation is a good routine practice before procedures which will probably last more than fifteen minutes. For shorter operations it is entirely unnecessary if the novocain block is accurate. In operations of half an hour's duration or longer, such an injection alleviates the mental strain which may develop even in the complete absence of pain. Whether or not it is necessary the surgeon must judge for himself on the basis of the patient's disposition and the duration of the operation. But I would emphasize that morphia and scopolamin are given for their effect on the patient's mental state, and never for any effect on pain. The latter must be prevented by novocain.

Next, we have to take into account the position of the patient on the operating table. The usual table is not comfortable for any one who has to lie in one position for an hour. The mattress should be at least two inches thick, and a great advantage is gained by relaxing the abdominal muscles by means of pillows placed under the knees, chest, the head and neck.

Iodine is irritating if allowed to come in contact with the genitalia or the inguino-scrotal junction and may be a source of marked discomfort to the conscious patient. Mercurochrome in alcohol and acetone, as suggested by Scott and Hill, is not irritating and is equally satisfactory for antisepsis. Acriflavine, 5 per cent in 50 per cent alcohol, has much to commend it.

The proper selection of syringes and needles is of the utmost importance. Small 2 c.c. syringes and short needles, which are suitable for the skin wheal only, are sometimes used for the entire injection. It is quite true that with this equipment an excellent anesthesia may be obtained, but it entails infiltrating layer by layer, sometimes before every stroke of the knife, after the older Schleich method. The field is usually flooded and edematous, and the surgeon handicapped. A syringe which holds 10 c.c. is neither so large as to be cumbersome nor so small as to need constant refilling. An eccentric tip and a simple lock nozzle are invaluable. The syringe designed by Labat meets all requirements. It is admirably balanced, will readily inject when parallel to the skin surface and may be detached with a half-twist from the needle when the latter is left in place. Needles should be pliable and unbreakable, and of sufficent length to infiltrate subcutaneously the entire line of incision.

The novocain solutions are best prepared according to the proper strength immediately before operation. In a busy operating room it will be found convenient to keep a stock solution of 2 per cent novocain on hand. This may be diluted with normal salt solution as desired. Sterile distilled water is entirely unsatisfactory as a solvent for novocain, because its hypotonicity entails a marked edema in the operative field. For the occasional or emergency use of novocain there are on the market 50 c.c. ampules of sterile salt solution to which may be added sterile novocain to the desired strength. Most of the standard brands of novocain or procain are satisfactory. I have been most satisfied with the French product neocain, which is marketed in sterile capsules containing 0.5 gm.

The use of adrenalin is a great adjunct. It is given with only one object in mind, the concentration and delayed absorption of novocain in a given area. It is indicated when the amount of novocain solution needed to circum-inject any field approaches the danger point. 1.5 gms.; or when the duration of the operation is so prolonged that the novocain solution will have been absorbed before the closure. Its hemostatic action makes a drier operative field, but this advantage is of doubtful value because of the capillary ooze which takes place later into the closed incision. The operator must use more careful hemostasis when adrenalin is given, and the drug should be omitted in patients who have toxic hyperthyroidism, diabetes mellitus or marked hypertension. A very convenient preparation is the 1 c.c. ampule of sterile synthetic adrenalin. Five minims are added to every 50 c.c. of novocain, but more than twenty-five minims should rarely be used. When it is necessary to restrict the dosage of adrenalin, it should be omitted from the subcutaneous injections rather than from the injections in the vicinity of the nerve trunks.

The fixation of towels and other drapings to the skin is best done with silk stitches. The usual towel clips pinch the skin too much and cause pain when in place for any length of time.

Local Anesthesia in Operations for Inguinal Hernia.—The details of the technique are described in such standard works as those by Labat, Braun, Farr, and others. The inguinal region is ideal for blocking, inasmuch as the nerve supply is fairly constant and variations may readily be controlled. I have been best satisfied with a combination of the Braun and the Labat technique, a modification which, following the Braun method for the subcutaneous injection, differs from it in making the transverse diameter of the rhombus a little wider, and follows the Labat method for the subaponeurotic and cord injections. Unanesthetized skin should be penetrated only for the initial wheal. Secondary wheals may be made without pain by the subcutaneous approach recommended by Farr. The injection of the ilio-inguinal and ilio-hypogastric nerves as they lie between the transversalis and the internal oblique muscles is usually accurately made through the para-iliac wheal. By keeping the needle in this wheal and injecting toward the umbilicus, descending fibers of the twelfth nerve are also anesthetized, and by continuing medially, 10 c.c. of novocain may be injected beneath the sheath of the rectus. For completeness, in order to reach branches of the intercostals which come off above the point of injection, the needle may now be gently inserted more deeply, along a line between the anterior superior spine and the umbilicus, and novocain injected into the subperitoneal space. This step is often avoided for fear of penetrating the peritoneum. As a matter of fact, if one injects as the needle is pushed forward, the peritoneum is detached by fluid, and accidental penetration becomes quite difficult. This may readily be demonstrated either on a fresh cadaver or at operation. In addition, even if the peritoneum be penetrated, no harm has been done unless the bowel is entered, and that also is difficult to accomplish accidentally. This subperitoneal injection is very important. It anesthetizes the sac and peritoneum about the internal ring, with the exception of that part which is supplied by the external spermatic branch of the genito-femoral nerve.

Through the para-iliac wheal, a long needle may be directed along Poupart's ligament down as far as the lateral border of the external ring. Novocain injected here and along the course of the needle will allow for error in the injection of the ilio-inguinal nerve, and for collateral branches of the lumbo-inguinal (a branch of the genito-femoral nerve) which sometimes curve around toward the lower border of the operative field.

From the pubic wheal, a needle is introduced into and upward along the upper and medial border of the cord, and novocain injected about the external spermatic nerve as it curves upward into the internal ring. The injection, if constant, diffuses subperitoneally and there is little danger of injecting the deep epigastric vessels, which lie close to this point, just at the medial border of the internal ring.

Finally, I have noted that traction on the sac of a direct hernia will sometimes cause pain. This, however, may be avoided by a deep injection into and beneath the spine of the pubis, a fact which lends weight to the view that the innervation of this portion may be overlapped by fibers from the sacral plexus.

The surgeon who attempts to employ with local anesthesia some of the dissecting methods which he ordinarily uses with ether invites failure. Operative technique should be slow and painfully exact. Sharp dissection must replace tearing, and tissue planes must be found and followed more gently than by opening scissor-blades. The spermatic cord should be opened sufficiently to avoid all unnecessary handling of vas, nerves and vessels. Traction on the sac should be steady and constant rather than abrupt and intermittent. By sharp dissection the sac should be separated from the cord rather than the cord from the sac. Steady traction will permit a much higher ligation of the sac than is possible with an intermittent pull. The latter often causes pain, since it makes more demands on one of the most sensitive and often least anesthetized areas of the operative field.

In summary, then, the success of a regional anesthesia depends upon close attention to many small details, without which we can never be sure of a degree of anesthesia satisfactory for both operator and patient. As a reward for his meticulous care, the surgeon will obtain an anesthesia suitable for any operation, and he will have the satisfaction of seeing his repair undisturbed by the post-operative retching and vomiting usually seen after ether. *Severn Apartments.*

No one has ever added up
  The value of a smile
We know how much a dollar is
  And how much is a mile
We know the distance to the sun
  The size and weight of earth
But no one here can tell you just
  How much a smile is worth.
—*Selected.*

ENDOMETRIAL CELL INVASIONS.*

By A. L. STAVELY, M. D., Washington, D. C.

The invasion of various pelvic organs and structures by the epithelial cells of the uterine mucosa furnishes one of the most interesting subjects dealing with gynecological pathology. The enthusiastic and painstaking work of Cullen in regard to adenomyoma and the later work of Sampson about endometrial cell transplants have thrown a flood of light, which has dissipated speculation and clarified our knowledge.

As Frank says, he, Cullen, "has welded the subject of adenomyoma of the genital tract into a clinical and pathological entity, characterized by the presence of tissue, identical in histology with that of the uterine mucosa, partaking of its physiological function in regard to menstruation and possibly accounting for the possibility of the ovum to nidate ectopically."

Adenomyoma of the uterus, which is in the nature of an hyperplasia of the uterine mucous membrane and myometrium, is a growth, which is described very succinctly by Cullen as follows:

"The uterine mucosa is often of normal thickness and looks perfectly natural; but as we approach the underlying diffuse myomatous tissue, the mucosa is seen to penetrate it in all directions, sometimes as an individual gland, but often large areas of mucosa are seen extending into the depth. In favorable sections one can follow a prolongation half way through the uterus. Where the diffuse myomatous growth ends, the outward extension of the glands also ends." An adenomyoma of the uterus, in brief, shows these features,—a normal or hypertrophic endometrium, a local increase and hypertrophy of the unstriated muscle and fibrous tissues, a deep penetration of the muscles with glandular prolongations of the mucosa and the presence in the involved areas of cyst spaces, lined with uterine mucosa and containing old blood. It may occur as an individual condition or in association with fibroids. Two rather extensive surveys show its presence in the ratio of one to every six fibroids. Where they occur together in the same organ they may be found in entirely different parts, or small fibroids may be seen in the adeno-fibroma, or the latter may be found

*Read before the District of Columbia Medical Society, at Washington, D. C., February 26, 1926.

as a polyp in the uterine cavity. The growth may occur in any part of the uterus, but has an especial predilection for the posterior wall. In the diffuse form it can involve the whole organ or it may be found in one horn or any other part, or it may surround the whole uterine cavity like a magnified endometrium. It may occur in a rounded form like an ordinary fibroid; but it has no capsule and can not be shelled out of the substance of the uterus. It has a characteristic appearance and can be differentiated from normal uterine tissue.

As to etiology of adenomata and the various other aberrant endometrial growths to be referred to later, there are several differences of opinion which may be mentioned. Von Recklinghausen says the epithelial constituents of adenoma and cystadenoma of the fallopian tubes and of their interstitial portions and of the outer peripheral layers of the uterus are derived from rests of the Wolffian body, while the centrally located adenomata of the uterus arise from the uterine mucosa or its equivalent, the Mullerian ducts (1893).

Pick (1897) says the Wolffian body and duct on one side and the Mullerian duct on the other stand in such developmental relationship to each other that we must ascribe the origin of the epithelium in adenoma and cystadenoma to both sources. Again, adenoma of the round ligament and of the posterior vaginal wall are of paroophoron origin and are due to displaced distal rests of the Wolffian body.

Robert Meyer believes the most common source of adenomata is the uterine mucosa; but he believes with Iwanhoff that ectopic adenomata develop through a metaplasia of the cells of the peritoneum. Following some inflammatory process these cells undergo change, send shoots or buds into the uterine tissue and form canals with epithelial lining, characteristic of uterine mucosa. He presupposes an inflammation always and says the fact that these growths show a decidual reaction is not proof of Mullerian origin, as it may occur in inflammation involving the omentum and some other tissues.

M. R. Robinson, in looking for a cause, says, "What is the common genetic soil from which spring all endometrial growths? Since the coelomic epithelium is the structural source of the generative organs, any morphological phenomenon arising in the body during adult life, which simulates the uterus structurally and functionally, must of necessity be a derivative of the same embryological rudiment.

"What really takes place in the evolution of an extra-uterine endometrial growth is a topical awakening of the genetic potentialities in some of the unused coelomic rests through a sudden increase or the stimulating or through a diminution of the inhibitory genetic forces. And just as the coelomic epithelium is capable of heterotopic endometrial proliferation without having to be displaced from the primitive (or fully developed) urinary or genital tracts, so can and does the connective tissue in the vicinity of these glands undergo cytogenous metamorphosis identical with that of the urterus without the process of displacement." He ascribes the cause of adenoma to an excess of ovarian hormones rather than to inflammatory processes. Sampson believes the peritoneal growths are due to a regurgitation of endometrial cells through the tube during menstruation and their subsequent implantation in the various pelvic areas. This will be referred to more later. Recently a German investigator, Halban, in considering the origin of adenomata, advanced the theory that endometrial epithelium may invade the lymph vessels of the uterus and be carried to points as remote as the surface of the uterus and even involve the pelvic and inguinal glands. The fact that in chorioepithelioma metastasis may take place through the veins to distant points like the lungs, suggests the interesting possibility of the veins serving as the avenue of transmission in some instances.

The symptoms of adenomyoma of the uterus are not characteristic. The uterus may be considerably enlarged, but seldom reaches such a size as may be seen in some fibroids. The consistency of the uterus is softer than in ordinary fibroids and may lead to a mistaken diagnosis of pregnancy. There may be an increase and prolongation of the menstruation. Differentiation from a soft or degenerated fibroid may be difficult. While adenomata are benign, there is a certain incidence of malignancy, which makes surgery advisable.

In May of last year I saw a patient upon whom I had operated several years ago for ovarian cyst of the left side. Both the tube and the ovary were removed at that time. On a recent visit I found a large cyst of the other side and advised removal. It proved to be a cystadenoma of pseudomucinous type; but the

particularly interesting feature was in the left horn of the uterus. The organ was soft and somewhat enlarged at the left horn, and embodied in the uterus was an enlargement the size of an egg. Thus, finding definite pathology, the uterus was removed also. This proved to be an adenomyoma, the exciting cause of its presence there probably depending upon some inversion of epithelial cells at the time the cornual stump was sewed over.

These remarks are introductory to a brief consideration of the further invasive properties of the endometrial cells into other tissues than the uterus and the tubes. Cullen has found them present in the following structures: body of the uterus, recto-vaginal septum, fallopian tube, round ligament, ovary, utero-ovarian ligament, utero-sacral ligament, sigmoid flexure, rectus muscle and umbilicus, and the appendix.

The growths involving the recto-vaginal septum are particularly interesting. Cuthbert Lockyear, of London, first called attention to this curious condition and his monograph, together with specimens sent to him by Jessup, of New York, stimulated in Cullen an interest which has resulted in a wide-spread knowledge of it in this country. He has reported experiences with an unusual number of cases. In the early stage the growth is apt to be unrecognized, unless the examiner is familiar with it. It first appears as a small nodule back of the cervix and in the vault of the vagina. It is quite firm to the touch and has a decidedly reddish or reddish-blue appearance. In the beginning there is no involvement of the surrounding tissues. The rectal wall is smooth and free and, if there is any indication of attachment anywhere, it may be to the cervix.

When first discovered it is generally from one to three centimeters in diameter, and forms a rather firm mass. In the more developed stage, or even before, there may be a similar showing in the posterior cul de sac. In most cases the rectal mucosa is not involved; in still more advanced cases we may find a spreading into the broad ligaments, compression of the ureters, involvement of the pelvic nerves, rectal infiltration and invasion of the vaginal wall. The pathological process is quite similar to that found in the uterus, non-striated muscular fibre, fibrous tissue and uterine mucosa, with here and there small cyst spaces filled with old blood and lined with uterine mucous membrane.

Symptoms.—Where the growth is small it is found by the merest chance in the course of a general examination. There is no intermenstrual bleeding. In the more developed stage there may be increase of pain during menstruation on account of turgescence in the mass and there may be a small increase in the amount of the flow, depending upon the size and number of the openings in the mass. During the time of engorgement there may be rectal bleeding, defecation may be attended with pain, and, later, when the growth has developed further, constipation and even obstruction. In the later stages the pelvic nerves may be pressed upon, causing constant pain, and the ureters may become blocked, with resulting hydronephrosis.

Diagnosis.—Inspection ought to furnish the greatest aid in differentiation. It may be mistaken for pelvic exudate, for adherent tubo-ovarian structures, for cancer and rectal growths.

Treatment.—We have a condition which is definitely invasive in tendency, and in a small percentage of cases carcinoma is found as a complication. Opinions as to treatment vary. Some think small growths may be watched and operated upon if they show a disposition to grow. Others are, or were, of the opinion that a thorough operation should be done. The rectum is sometimes seriously involved and an excision of the rectal wall or a resection may become a necessity. When surgery is impossible X-ray or radium may be tried, but without great hope of success.

Graves made a very interesting observation last year which offers a chance of relief in some of those cases that are not considered operative, and this may be found to have great value,—that is, the removal of the ovaries to bring about cessation of menstruation and atrophy of such growths. Graves' first case was a woman with a large fibroid uterus. Hysterectomy with removal of both ovaries was performed. Two hard tumors, one the size of a walnut, thought to be adenomata, were left at that time on account of dense adhesions to the rectum. Four and a half years later, another examination showed they had disappeared. In the second case there were several small fibroids and a blood cyst the size of a fist in the posterior cul de sac. These were re-

moved with difficulty. In the left parametrium was a dense infiltration with nodulation, which extended to the rectal wall. A year and a half after the operation the mass had disappeared. In a third case he found a large fibroid extending above the umbilicus and an extensive induration in the pelvis, which pressed upon and caused a bad stricture of the rectum. At operation, performed at a later date, he removed the uterus and tubes and ovaries and drained the bowel through a Mixter tube. At that time the rectal occlusion was almost complete. Five months later a distinct softening and diminution in the tumor was noted. Two months later she was in good physical condition, with normal movements accomplished with the aid of one dose of mineral oil a day, and the mass had undergone further diminution in size and hardness. Some similar reports have been made by others, though Cullen and others cite cases where no results were obtained after a double oophorectomy. These observations are very illuminating, and may lead to radical changes in methods of treatment.

Some few years ago I was asked to see a patient of Dr. Clark's, a woman 30 years of age, who had menstrual discomfort and some other symptoms suggestive of pelvic trouble. Without going into extensive details, it will suffice to state that through a vaginal speculum a small cervix was seen, and back of it in the posterior fornix was a reddish-blue mass about 3 centimeters in diameter, firm and not tender. Examination with the finger through the rectum revealed a tumor the size of a walnut, distinctly rounded and circumscribed, and not involving the rectum. An operation being determined upon, an attempt to remove it through the vagina was essayed, but abandoned on account of virginal conditions, and the abdomen was opened. After placing her in the Trendelenburg position, and after packing off the intestines, a reddish-blue mass was seen, presenting exactly the same size and appearance as was noted in the vagina. Finding no evidence of extension, I tried simple excision, but during the process a severe hemorrhage developed, which was controlled with difficulty. She made a good recovery and had no recurrence.

Another case, Mrs. L. D. K., of Hagerstown, age 35, had been a patient of Cullen's in 1907, when he operated during the early months of pregnancy and removed a pedunculated fibroid three or four inches in diameter. In 1915 she came under my care, at which time I removed a large fibroid uterus with both tubes, one ovary and the appendix. The cervix was not removed and at that time there seemed to be no particular reason for doing so. After that, she was in much better health for many months. Following the operation she had a scant discharge every month. Before the operation the discharge had been rather bright in color, but afterwards it became darker and contained mucus. During the last year before the final operation there was some inter-menstrual bleeding, and sometimes there was blood from the rectum. She was decidedly constipated and during menstruation there was an aching pain when the bowels moved. Examination revealed an extensive thickening and hardness in the recto-vaginal septum and an extensive thickening of the bowel wall. I advised operative procedure.

In May she went to the Hopkins Hospital to Dr. Cullen, and a few days later, through his courtesy, I was enabled to see the operation. There were some adhesions, which were gradually disposed of, after which the ureters were dissected out, a large number of veins tied, and the mass removed after a siege of four hours. In freeing the posterior vaginal wall there was an escape of dark colored blood from the space behind the cervix. The cervix was closely adherent to the rectum, which was itself badly involved. Intending to excise the anterior part of the rectal wall only, he made an incision and found the condition so bad that he finished finally with a four inch resection. At the end of the operation the patient was all in, and for two weeks her condition was very serious. After some days urine passed through the vagina as did the major portion of the bowel contents. Two months later there was an opening, one and a half centimeters in diameter, in the anterior part of the rectum. She died a few months later. The specimen removed showed extensive infiltration of the rectal wall and posterior part of the cervix, which was perforated. The infiltration also involved the vagina. If I had removed both ovaries in the second operation, perhaps she might have been saved all subsequent trouble.

Adenomyomata have been found around the navel, along the course of abdominal scars and

in the recti muscles. The growths are usually small, occur during the child bearing period, increase in size during menstruation and, where there is an external opening, discharge blood. Cullen refers to three cases of recti muscle involvement, which he collected from the literature and considered very rare.

Early in 1922 a Mrs. McM. came to me on account of a breast tumor which proved to be a cancer. About eight years before, on account of a complete placenta previa, I delivered her at term of a normal child by Cesarean section. Before leaving my office she said the upper part of the old abdominal incision had never healed; that for a long time, for several years in fact, she had noticed a small lump just above the navel, which became sensitive during her periods and discharged about a tablespoonful of blood at that time. I found a distinct oval mass about two by one centimeters situated at the upper end and under the scar of the old abdominal incision, and about one centimeter from the navel. I operated on her for carcinoma and at the same time removed the growth from the abdominal wall, the latter proving to be a typical adenoma. Since this experience, I have seen or heard of a few similar reports. During the Congress of Physicians held here last year, two papers were read on the subject. In all of the few cases I have heard about there is a history of previous operation, resulting in invasion of the uterine cavity either by incision or by perforation by some instrument, and it is very evident that in all these cases there has been a transplant of endometrial cells into the tissues of the abdominal walls during operation, this having formed a nidus for the development of the tumor. In pelvic operations one often finds nodular swellings in the uterine cornua or along the tubal isthmus, to which the name of salpingitis isthmica nodosa or nodular salpingitis has been given. Most of these are cellular inclusions of tubal epithelium. The nodular or spindle-shaped growths in the round and sacral ligaments are, according to Ewing, more likely to be congenital and due to epithelial rests.

W. W. Russell, as early as 1899, reported finding endometrial tissue in the ovary. After Russell's observation, Cullen reported four or five cases, two of which were in his own service. Since then some notable articles have appeared, chief of which is Sampson's (1922). Sampson has been making an intensive search for the condition and reported finding 37 cases in a year's time these occurring in 170 abdominal operations for pelvic disease. These have been styled perforating, hemorrhagic or chocolate cysts of the ovary; but Sampson preferred the term, ovarian hematoma of Mullerian type, because they develop from the epithelial cells lining the uterus or tubes. Later terms, endometrioma or endometriosis, seem to have taken the medical fancy and will, on account of brevity and applicability, in all likelihood replace the more cumbersome designation. He attributes them to a regurgitation or back wash of epithelial cells from the uterus or tubes into the peritoneal cavity, frequently promoted by some abnormal condition like a retroflexion, polyp or fibroid.

M. R. Robinson says that with all deference to Sampson's achievements, these teachings excel any of the histogenic theories in pathological casuistry and fantasy. Sampson's views on the subject, however, seem to have met with general acceptance. The points of development of these growths have a direct bearing on the relationship of the fimbriated extremities of the tubes to other structures, and these are the under and lateral surfaces of the ovary and the most dependent part of the cul de sac of Douglas. These implantations may involve one or both ovaries or may be found on the peritoneum without involvement of either. They may be located most anywhere on the posterior surface of the broad ligaments and the pelvic fossa. Somewhile ago I found during an operation a hard area of limited extent at the bottom of the vesico-uterine fold, which contained chocolate colored blood. This was excised, but not examined. The peritoneal endometriomata are generally small and isolated, and are usually of little significance clinically. The implantation on the ovary may be superficial, in which case the growth is small, or it may be deep and develop into a cyst several centimeters in diameter. Sampson believes that there is a tendency to self-destruction in these growths through the intermittent filling up with menstrual blood and subsequent exfoliation of cells, as occurs with menstruation. There is always a tendency to perforation at the time of the menses due to pressure of confined blood and, when this occurs, there is a disposition to the formation of adhesions. Implants on the peritoneum may take

place by the direct deposit of epithelium from the tube, or may be secondary to the rupture of an ovarian endometrioma. In the latter case he believes the growths may be more dangerous than the primary, although this is hard to determine. He further expresses the belief that these implants may be the cause of ovarian cysts and carcinomata.

I recently operated on a patient 53 years of age, who had been menstruating regularly and profusely with no indication of the menopause. She had for a long time been complaining of pain in the right iliac region. The operation was for removal of a multinodular fibroid and the ascertaining and removal of the cause of pains, possibly a bad appendix. The condition was as diagnosed; but, in addition, there was at the isthmus of each tube a nodular swelling about the size of a bean. The left nodule had a distinct small area like a blood clot and around it a few small vesicles. The right was the same, only less pronounced. They were both of endometrial origin. The uterus contained a small polyp, and both ovaries were plastered down to the pelvic floor and very adherent.

At a recent meeting of the American Association of Gynecologists, Keene reported a bladder affected by an adherent chocolate cyst where there was frequent micturition and discomfort at the time of menstruation, but not during the intervals. Inspection of the bladder showed a bluish-red area and around it some small vesicles. Another similar experience was described on the same day by another writer.

Sampson, in a later paper, reports three cases, which he calls inguinal endometriosis. Nodules were found in the groin. They became tender during menstruation and were found to contain cavities filled with blood. From these findings he has developed the theory that these are or may be metastases, just as might occur in carcinoma. Ewing, in discussion of the paper, says "Anyone who is familiar with the structure of pelvic tissues will realize that this region is a regular *pot pourri* of tissue abnormalities of various types. Here we see metaplasias of the intestinal and of the peritoneal lining cells. Nearer the uterus and tubes we often see tissue rests which have never been successfully interpreted or classified by any one, and he is inclined to advise a little caution about acceptance of round ligament metastases.

In Resume.—Endometrial cells have the ability to invade directly the uterine musculature, forming adenomyoma of the uterus. They may be carried along the tubes during menstruation and, on contact with the pelvic peritoneum, form small tumors containing endometrial tissue. They may be deposited in the ruptured Graffian follicle and form the chocolate blood or hemorrhagic cysts, as variously styled. They may be deposited in the abdominal wound during operations on the uterus and form endometrial growths, and they may, if Sampson's conclusions are correct, be carried along the lymphatics and veins and, by metastases, cause tumors in the groin and possibly in far distant parts, as in cancer.

1744 *M Street, Northwest.*

THE MANAGEMENT OF LOBAR PNEUMONIA.*

By A. E. MURRAY, M. D., Beaverdam, Va.

Since the earliest medical records (460 B. C.) until the present time, lobar pneumonia, a malady which frequently confronts the physician, often costing the patient his life or robbing him of his future good health, and causing his friends and relatives great anxiety, has held its rank with other diseases in demanding of the physician much thought and consideration in caring for his patient.

A fundamental principle which experience has established is that no single plan of treatment can be advocated for all cases of pneumonia. If it be regarded as a constitutional disease with a local lesion, then the consolidated lung does not demand special treatment, provided it undergoes resolution without complications.

The patient should be placed in bed in a quiet, moderately heated, well-ventilated room and protected from all draughts.

The food should be of the most nutritious, easily digestible character, and should be given at three hour intervals with medicine so as to allow a period of rest.

The nurse should be instructed to watch for a lack of assimilation and gas formation, as a distended abdomen is not only uncomfortable to the patient but may prove fatal.

Venesection has been greatly agitated by medical men and it appears to be a settled

*Read before the Hanover County (Va.) Medical Society

fact that venesection is very helpful to certain cases.

INDICATIONS FOR BLOOD-LETTING

If the patient has been healthy and is seen in the first or early in the second stage with a marked dsypnea, flushed surface, temperature 105° or more, pulse 120 or more, or a slow full pulse—showing cardiac oppression, the loss of 12 to 16 ounces of blood will often greatly relieve the symptoms. The relief of the symptoms should be the guide as to the quantity of blood to let, as it is done for the amelioration of symptoms, and not for cure of the disease.

There being no specific remedy which will favorably influence the pneumonic process, the physician is left to judge in each case what is best for the patient and to select from the pharmacopeia such agents as are necessary for conditions as they arise. Some mild cases will recover with very little or no treatment, while others demand much skilful attention.

When treatment is instituted, we should not only watch local conditions in the thorax, but should treat the patient in a general way. In the beginning, if venesection is not indicated, relief of pain may follow the use of cupping, hot poultices, mustard plasters or turpentine stupes. If the tongue is coated and the gastrointestinal tract inactive, a calomel purge is indicated, although vegetable purgatives may suffice. The cautious administration of some of the coal-tar derivatives incorporated with Dover's powder, codeine, or morphine, is helpful in relieving the distressing symptoms. These agencies are directed at relief of the distressing cough. For this purpose, probably morphine is best, in 1/12 grain doses, with one-half ounce solution of citrate of potassium flavored with lemon, and repeated every two or three hours.

Stimulation is sometimes necessary, even from the beginning, especially so in the aged, adynamic and alcoholic. Whiskey, one-half to one ounce, in milk every one to two or three hours, as necessary, acts very satisfactorily in some cases. Aromatic spirits of ammonia is also a good stimulant at this time. Sometimes it is neccessary to use strychnine in full doses throughout the attack, and quinine is helpful when administered with the strychnine at the beginning of the disease. Aconite and veratum viride are receommnded to relieve tension, and veratum viride is said to relieve delirium. I think it unwise to use more stimulation at first than is absolutely necessary. At this time, with a resistance in front of the heart, it is not a good procedure to over-stimulate, when we know that a crisis is coming.

Sometimes it is necessary to lower the temperature. A moderately high temperature (103-105) may be lowered by acetanilid guarded with strychnine, and sponging with alcohol, or water at a temperature of 60°F. Higher temperatures may require the application of icebag to the chest.

Shall we blister? and if so, when? It seems to be a universal opinion of the medical profession that if resolution is delayed, a blister locally, and iodides internally, are indicated. In this locality custom sanctions it, and the patient's friends demand that a blister be applied when the physician makes his first visit. I have seen as speedy recoveries without blisters as with them.

One typical case of lobar pneumonia, with the exception of an unusual amount of blood in the sputum, reached the crisis on the fifth day with the blister on the mantel.

From the second stage to convalescence it is very important to watch the heart's action, as most fatalities in pneumonia are due to cardiac failures. Digitalis, strychnine, nitroglycerine, and ammonia with whiskey, are probably our best stimulants. Strychnine sulphate, gr. 1/30, should be given every 3 hours and digitalis in moderate doses unless the tension is very low, then give full doses. If the tension is high and the right heart is embarrassed, nitroglycerine and aromatic spirits of ammonia are indicated. Whiskey may tide over an attack. Morphine in moderate doses also seems to act as a stimulant, and when dyspnea is associated with pain, a hypoderemic of morphine often proves beneficial. However, if there is pulmonary edema, opiates are contraindicated.

Insomnia and delirium can usually be relieved by sulphonal, trional, or chloral hydrate combined with sodium bromide.

In the latter stages of pneumonia ammonium chloride is a very popular drug and being eliminated through the mucous membrane, is supposed to aid resolution. It may be suspended in a stimulating expectorant mixture similar to the following:

Ammonii chloridi ʒiii
Aquae chloroformi ʒii
Syr. Picis Liquidae
Syr. Pruni Virginianae aa ℥vi

Sig: Take 2 teaspoonfuls every three hours.

In the second stage I have used ammonium chloride suspended in mistura glycyrrhizae composita.

Another compound in which I have used ammonium chloride and gotten good results is syrup white pine and tar compound, manufactured by S. E. Massengill Co., Bristol, Tenn. Each fluid ounce of this preparation represents (alcohol, 6 per cent): Chloroform miv, White Pine Bark gr.xxx, Wild Cherry gr.xxx, Spikenard gr.iv, Balsam Poplar Buds gr.iv, Sanguinaria gr.iii, Sassafras gr.iiss, Tar q.s.

I have added codeine sulphate to the above mixture when it was necessary to suppress the cough.

After reaching convalescence, the patient should have a very nutritious diet and the quantity increased as rapidly as it can be digested and assimilated.

Tonic preparations, such as iron, quinine, strychnine and cod-liver oil compound should be administered as necessary.

In regard to serum treatment, it is claimed that if the serum is prepared from the same strain of organisms as that causing the disease, then good results will follow its use. This can only be done in hospitals or close to well-equipped laboratories. So far as I can ascertain, vaccines have not proved of much value.

TREATMENT OF ACUTE LOBAR PNEUMONIA.*

By W. A. CAMPBELL, M. D., Old Church, Va.

Discharges from the mouth and nose should be burned. The patient should be isolated in a quiet room, so located that the sun may shine into it as many hours of the day as possible. At least two windows, or a window and a door should be kept open. An open fire is to be had if possible, when artificial heat is needed. A "heater" will do more harm than drugs can do good, in some instances. The temperature of the room should be kept at about 65° F. The patient should be screened from drafts.

The position in which the patient breathes most easily should be allowed; the tendency to hypostatic congestion should, however, be antagonized, if possible. As a rule, reasonable change of position is comforting.

Rest of mind and body cannot be overdone.

The bed clothing in winter should be light weight woolen blankets—just enough for the patient's comfort.

Give a warm sponge bath night and morning—with windows and doors closed, and the patient under the cover in cold weather. Keep the mouth clean with salt water, or some other pleasant wash.

Water should be taken freely.

The diet should be nutritious, but easily digested. Carefully estimate the patient's digestive ability, thus in large masure avoiding gaseous distention of the intestines, and diarrhoea. Meat and vegetable broths, strained oatmeal, buttermilk, or lactic-acid milk, calf's foot jelly, fruit juices, etc., are suitable forms of nourishment.

After the crisis, soft toast, soft eggs, chicken, game, etc, may be taken. Gradually increase the diet, being guided by the patient's taste, when possible.

In cases of average severity, the patient may be allowed to sit up after the temperature has been normal for ten days.

The published results obtained by the use of serums, vaccines, etc., promise increasingly favorable reports for the future.

A laxative, to be repeated if needed for the relief of toxemia or constipation, is of immense value. Calomel is the favorite for the relief of toxemia, followed by a palatable saline.

Digitalis should be given in full doses when there is a suspicion that pneumonia is present, and the dose increased or decreased as indicated. It should be increased if the pulse becomes unusually accelerated or weak.

Caffein, strychnine, camphor in oil, whiskey and ammonia are valuable in circulatory failure.

Pituitrin, or adrenalin, should be injected in emergency, as long as the systolic blood pressure remains below the pulse frequency, and until there is a safe interval between them.

Venesection should be done in cases with cyanosis and failure of the right ventricle.

Quinine is of real value when given in sufficient doses. It seems to destroy the pneumococcus.

A full dose of some pleasant alkali, three times a day, is of value.

---

*Read before the Hanover County (Va.) Medical Society.

Mustard poultices, hot stupes, and wet or dry cups, will relieve the pain in many cases. Morphine, hypodermically, may be necessary.

Cough can best be relieved by codeine. Ammonium chloride, and syrup ipecac, if the expectoration is very viscid, may be of service.

Atropine is of value when there is excessive bronchial secretion.

Insomnia can usually be relieved with bromides or chloral.

For abdominal distention, turpentine stupes and asafoetida enemas usually suffice. A rectal tube is also effective. Pituitary extract may afford temporary relief.

CANCER OF THE GASTRO-INTESTINAL TRACT BELOW THE DIAPHRAGM.*

By SAMUEL ORR BLACK, M. D., Spartanburg, S. C.

Cancer of the stomach constitutes about 25 per cent of the malignancies of the body. It is more frequent in the pylorus than in the cardia and is more often situated on the lesser than on the greater curvature.

At the present time many clinics contend that it follows ulcer in 70 to 80 per cent of the cases. Others, equally as reliable, insist that gastric ulcer becomes malignant in but 10 to 12 per cent of the cases. Obviously, somewhere between these two extremes the truth lies.

Perhaps the chief reason for so great a discrepancy lies with the pathologists themselves. What is a malignant slide to one will be benign to another. These specialists have never gotten together in their interpretation of border-line pathology.

Recently, the American College of Surgeons has appointed a committee of distinguished personnel to collaborate with a committee of eminent pathologists, to study bone tumors in general and sarcoma in particular. The motive of the college is to find common ground on which to stand, to clarify existing confusion so as to select one term to be used by all when speaking of a particular condition. It is, therefore, obvious that, until pathologists agree, ordinary men (physicians and surgeons) must await the truth as to just how often gastric carcinoma follows in the wake of gastric ulcer.

In the gastro-intestinal tract, cancer is found almost exclusively in that portion harboring an acid medium. Proof of this is seen in its relative frequency on the pyloric side of the valve and its rarity on the duodenal side, which is normally alkaline in reaction. Throughout the small intestine the juices are alkaline, and cancer here is almost a surgical curiosity. In the cecum, the juices are acid and cancer is again a common occurrence.

In a series of 1846 cases of cancer of the bowel, published by the Mayo Clinic, the small intestine was involved but twenty-four times.

Early cancer of the stomach is difficult to diagnose, before, during or after the operation. Before operation, in many instances, it is impossible to state that this particular case is a cancer or that it is simply an ulcer. In fact, during the operation, with the abdominal wound open, and the affected parts lying in plain view, it is often impossible to decide. Differences existing among pathologists have already been cited, and from these it is evident that, even after the operation is over and the reports of different pathologists are at hand, the surgeon is often still in doubt as to whether the lesion was malignant or benign.

Clinically, there are a few simple facts which should be borne in mind. The peak of the ulcer curve occurs about fifteen years earlier in life than does the peak of the cancer curve. The ulcer patient usually gives a history extending back over a period of many months, often years, whereas, it has been our observation that in the case of cancer, the history extends back from but three to six months as a rule.

It is, of course, difficult to prove that some cancer cases were not at one time ulcers. All abdominal surgeons see cancer cases that have a history of having had stomach trouble for many years, twenty or more, and it is unreasonable to assume that cancer existed all that time.

The treatment of choice for operable gastric carcinoma is clean cut excision. By such a direct attack it is often possible to remove the entire disease bearing area. The indirect route, gastro-jejunostomy, affords only temporary relief.

The Mayo-Polya technique for operable malignancy situated in the pyloric end of the stomach is comparatively simple, is relatively easy to perform, and gives a satisfactory physiological function.

Healing of a gastric wound takes place

*From The Mary Black Clinic.

within a very short time. Examinations made within eight or ten days by the naked eye alone reveal in the absence of infection, a well-healed post-operative gastric wound.

There are two things which interfere with rapid union, or healing in a gastric wound: first, infection, and, second, extensive fibrosis in the parts immediately adjacent to the site of injury.

Cancer of the Small Bowel

It has been estimated that carcinoma occurs in the small intestine in about 3 per cent of all the carcinomas of the entire intestinal tract. Necropsy reports from various large clinics cite the greatest frequency in the duodenum, next, in the jejunum, and, lastly, in the ileum.

It is an accepted fact that duodenal ulcer rarely, if ever, becomes malignant. The reason for this is not known. In the duodenum, malignancy is occasionally seen in the region of the ampulla and, when extensive, it is often impossible to tell whether the lesion began in the head of the pancreas, in the mucosa of the ampulla, or in the mucosa of the bile duct.

In the jejunum and ileum, cancer occurs as a degenerated polyp or as a ring carcinoma. Polyp may be single, though often they are multiple and, extending into the lumen of the bowel; they may produce obstruction or intussusception.

Ring carcinoma at first is very small, but as it closes the lumen of the intestine, the proximal bowel gradually distends and approximates or even surpasses the large bowel in diameter. When found early, complete removal is the procedure. If this be inadvisable because of too extensive involvement, entero-enterostomy will temporarily relieve the difficulty by short-circuiting the fecal current around the point of obstruction.

Cancer of the cecum is the least malignant of all cancers in the gastro-intestinal tract—from the mouth to the anus. In this region, delayed or late operation will do more for the patient, than it will for malignancy situated elsewhere. A diagnostic point in interpreting abdominal pathology is the presence of visible and palpable peristaltic coils of bowel. This is usually present in cancer of the colon, and as the constriction becomes more marked, the distended coil becomes more and more prominent.

The treatment of colonic cancer is, whenever possible, wide excision of the cancer-bearing area. The two-stage operation is becoming more popular. When the lesion is in the right colon, Crile advises ileo-colostomy first, and, after ten to fourteen days, he goes back and excises the growth itself. Should the lesion be in the middle or left colon, cecostomy might be performed, to be followed later by resection. Such a process side-tracks the fecal current from the proposed operative field, tension along the suture line after resection is practically done away with, and the operative time itself is lessened.

We believe it to be next to impossible to do a resection of a portion of the colon without soiling the operative field. In this operation, the retro-peritoneal space is opened and its defensive mechanism is less than that of the peritoneal cavity. Besides this, feces, passing over a freshly made raw surface, predispose not only to immediate infection, but to a low grade generalized infection which often is not fatal until ten, twelve or fourteen days after the operation itself. This is obviated in intestinal resection by the preliminary ileo-colostomy or cecostomy.

In the transverse and descending colon, the Mikulicz operation frequently affords a simple technique and an easy convalescence. At the first seance, the diseased area is mobilized and brought out into the abdominal wall where it is allowed to remain for several days, depending upon its blood supply. When the incisional wound has sealed over, the tumor area is excised by knife or cautery and the artificial openings are dressed as frequently as is necessitated. The patient is allowed up, and when improvement has taken place and edema has disappeared from the apposing loops, an opened forcep is inserted, one blade into one loop, the other blade into the other loop, and the forcep is gradually tightened. After several more days the forcep is removed and the ends of the two loops of bowel are anastomosed. The parts are then dropped back into the abdominal cavity frequently with a catheter fastened into the lower ileum for drainage purposes. After four to six days it is removed.

Recently the question has been raised as to whether cancer of the rectum is more amenable to radium or to the knife.

In either instance, colostomy is usually first performed; after a week or two, the patient is

given a low spinal anesthesia and, after Kraske, the rectum is removed. When radium is used, it is to be applied directly to the involved parts either down through the colostomy opening or up through the anus itself.

Roentgen therapy through the loins and through the back should supplement this form of treatment. At the present time it is our belief that the operative procedure offers more than does the radium.

Generally speaking, in surgery of the gastro-intestinal tract below the diaphragm, before undertaking any operative treatment, the surgeon should well consider the patient as a whole. He should not lose sight of the great advantage afforded him by (1) the two stage technique; (2) blood transfusion, if anemia exists; (3) infusions for dry tissues and general weakness; (4) rest and comfort by the administration of morphia sufficient in amount to maintain quiet; (5) heat, externally applied in the form of warm blankets, immediately following operation, and, lastly, it should not be forgotten that a low spinal anesthesia, in a great many cases, is far superior to inhalation anesthesia for rectal carcinoma.

References.

1. Pannett. *British Medical Journal.* March 14, 1925.
2. Judd. Papers of Mayo Clinic. 1920.
3. Crile. Lecture on Surgery, Charleston, S. C., 1925.

THE SOMATIC SIDE OF THE MENTAL PATIENT

By V. BLACKSTONE WILLIAMS, M. D., Washington, D. C.
Internist, St. Elizabeth's Hospital.

Commenting upon the physical ailments of mentally ill individuals, one might expect these to be of a more difficult interpretation than patients with normal minds, and they are in many instances.

At Saint Elizabeth's Hospital, the insane are being cared for in a separate department of medicine and surgery that is in reality a hospital within a hospital devoted to the physical care of these patients.

In charge of this particular department is a Chief of the Medical and Surgical Services, who is the executive head and attends to the numerous administrative duties connected therewith. Associated with him is a surgeon who cares for all surgical cases and operations and an internist who diagnoses and treats all of the medical cases, while valuable assistance is given these associates by carefully selected interns upon each of these services.

A training school for nurses has been established, where they receive a regular course in theory and practice in the care of medical and surgical patients and later affiliate with other hospitals for obstetric and pediatric nursing.

Briefly, the system used in the care of a patient who may have a physical illness in our hospital is as follows: First, the psychiatrist upon his ward notices that a patient has a subjective or objective symptom which he believes should be investigated by our department; it may be cough, loss of weight, expectoration, fever, skin rash, vomiting, hematuria, pain and so forth. He transfers this patient with a briefly written note to our hospital department.

Upon admission to the receiving ward, the patient's temperature, pulse and respiration are taken by a nurse who starts a hospital ward chart consisting of a temperature, pulse and respiration sheet, history and physical examination sheet, nurses' notes, laboratory reports, treatment and diet ordered and progress notes.

A complete physical examination is made by the intern and the result recorded systematically upon the chart.

Suppose the case to be one of acute follicular tonsillitis; this diagnosis is written upon a card in the office, where a card system of all admissions, transfers, deaths, etc., to this department are recorded, and at the end of every month a summarized report of all cases treated is made from these cards. When the patient recovers from his tonsillitis attack, he is transferred back to the ward from which he came. A brief transfer note written by the internist to the psychiatrist containing the diagnosis and present condition of the patient accompanies the patient to his ward. Another typewritten detailed note is made by the internist, a summary of the patient's physical condition, giving the diagnosis and important laboratory findings more in detail than the transfer note.

In this manner one can readily see that the patient gets the full benefit of especially qualified physicians, who devote their entire time to this work; he is in a hospital ward where he receives systematic medical and surgical treatment and special nursing care, and this takes the responsibility of an organic disease rightly away from the psychiatrists, allowing the latter to devote their entire time to their psychiatric work.

A dispensary is also run daily for up patients, where special examinations and treatments are made, as in other clinics, with ear, eye, nose and throat, skin, medical, surgical and genitourinary service. Atttending specialists donate their services to this work.

Upon all cases who die an autopsy permission is requested of their relatives and a very high percentage obtained. These furnish not only material for scientific study, but help materially in showing us our mistakes in diagnosis and treatment, as well as our good results. A laboratory takes care of all routine tests, also research work is constantly performed by our pathologist, neuropatholgist, bacteriologist and their technicians. Our pathologist has taken a special interest in the recording of all autopsy findings, including anthropometric and endocrine data as well as in directing the entire activities of the laboratory.

Our clinics and clinical material are opened to students of the medical schools and to physicians, and ward walks, lectures, operations, examinations and autopsies are witnessed by them.

Several cottages for male and female tuberculosis patients are maintained, where these patients lead a life mostly outdoors and receive special diets and special treatments when indicated.

A ward for all the chronically ill medical cases is run by this department, as well as a contagious ward which is held in readiness at all times for use when necessity arises.

Of course, it is not our claim to cure insanity by treating these organic medical and surgical ills, but to do the same as any physician; namely, to relieve suffering and prolong life.

If an acute or chronic appendicitis might be a factor even remote in a patient's psychosis, we remove this factor; likewise, we deal with any other organic disease amenable to treatment.

One can see what a satisfaction this is to relatives of these patients to know that everything is being done for their comfort and welfare, that their physical ailments are not neglected by the institution which they enter and that a like service is given them comparable to the best hospitals of this country.

Of strictly medical interest might be mentioned some of our problems and interesting observations. General paresis is being treated by malarial inoculation, with hopeful results. Chronic encephalitis cases are being studied, in which we find destruction of the substantia nigra at autopsy to be constant. Some of the brain tumor cases presented no symptoms which would lead one to suspect their presence, all symptoms at the last being obscured by their psychosis and a terminal illness while in the hospital wards, and an autopsy disclosed a large tumor mass. Endocrine disturbances and pituitary tumors, while not so frequent or easily diagnosed, are looked for constantly, and numerous basal metabolism, blood chemistry tests and X-ray examinations of the sella turcica are made. A great many of our elderly patients and our cardiac cases die with cerebral hemorrhage (apoplexy), so a review of cerebral hemorrhage cases was begun.

Tonsillitis cases which were cultured showed that most of them harbored resistant hemolytic streptococci, some Vincent's angina, and a lesser number of other bacteria were the predominating organisms.

Pyorrhea and numerous abscesses of the teeth and all dental conditions are referred to our dental surgeon, particularly in neuritis afflictions, myalgia cases, cardiac cases, pernicious anemia and stomach ulcer patients.

Several lung abscess cases are at the hospital undergoing special treatments from time to time.

Our pleural effusion cases all recovered without tapping the chest with the exception of a few, and I believe promiscuous tapping of the chest, because fluid is present, should be abandoned, and it should rarely, if ever, be done for diagnostic measures.

Sunlight, violet ray, both the Alpine and the Kromayer lamps, have been used upon our tuberculosis cases with more or less benefit, and excellent results have been obtained in some of our skin cases.

Several cardiac cases with broken compensation, who could not walk up and down stairs to their meals with other up patients in the psychopathic wards, are under appropriate treatment, able to lead a life free from this added exertion, in the medical wards.

Last minute injection of adrenalin into the heart muscle was tried in dying cases considered hopeless, without results.

A modified Sippy diet has helped our gastric ulcer and duodenal ulcer cases.

Rigidity of the abdominal muscles cannot be relied upon in the examination of the abdomen of an insane patient as a sign of acute inflammatory processes, and localized tenderness will not always be elicited; in fact, I believe some mental patients can suppress this sign to an unbelievable degree.

Cancer cases are somewhat rare in the insane, while tuberculosis is an almost constant ending in true catatonic dementia precox cases, and a small heart is found in the latter type of mental case upon post-mortem examination.

Gastric ulcer in the insane is at times very hard to diagnose, as early signs and symptoms are lacking. This is true also of tuberculous peritonitis and colitis which usually turns out to be some other condition than the expected one.

One case of amoebic dysentery was treated with excellent results by colonic irrigations with mercurochrome, using a special method in taking advantage of antiperistalsis while introducing the solution into the colon by a special apparatus, making use of a Hughen's valve and a Norman tube.

Erysipelas cases were treated with mercurochrome and acri-violet locally, with better results by this method than any other known treatment advocated.

Intravenous administration of mercurochrome in streptococcic infections was without appreciable effect; likewise, the relapsing fever treatment of general paresis by inoculation with spirochaete directly into the blood stream was productive of no benefit upon one series of cases.

I might add, the treatment of cancer by the X-ray and the X-ray treatment of goitre and hypertrophied tonsils is being undertaken.

Many other diseases are at present being investigated scientifically in this department, which will be mentioned from time to time in other papers.

A few interesting cases may be briefly noted, as follows:

1. A patient with aphasia had numerous vague symptoms, the exhaustive study of his case being entirely negative. At autopsy, a small area centrally located in the right lung showed a tuberculous abscess the size of a dime.

2. A case with continual vomiting for ten days made an uneventful recovery, when death appeared imminent, under mixed treatment. The diagnosis given was syphilis of the mediastinal lymph glands and achylia gastrica with chronic gastritis.

3. A male patient entered the hospital and was admitted shortly thereafter to our department where the only symptoms present were manifestations of acute chorea. The case terminated fatally. Autopsy was performed and no pathology was found anywhere to account for his difficulty, so the cause of death was given as unknown, as a thorough pathological study revealed all the organs to be normal.

4. A young colored female with continual vomiting, admitted as an emergency case, was diagnosed pyloric obstruction, the patient presenting all the signs of an acute abdomen, so to speak. Autopsy later showed tuberculosis of the tracheo-bronchial glands with pressure upon the esophagus, a small fibroma of the pylorus and tuberculoma of the right adrenal gland.

5. With a rigid abdomen and a white blood count of 20,000, and a polymorphonuclear count of 85 per cent, a case of general paresis was admitted with a view to operation, but operation was advised against. No symptoms or signs were present in the lungs. He died the day admitted and autopsy showed a small apical pneumonia of the right lung.

6. A case of syphilis with Vincent's angina, with both general and local spirochaetes present, was among the cases treated.

7. A case of aphasia in cerebral arteriosclerosis, apparently well in between the aphasic attacks, later died during one of these periods.

8. In all the patients inoculated with malaria for the treatment of general paresis who developed malaria, none of them presented any enlargement of the spleen, which is one of the diagnostic features of this disease.

9. One man developed a diaphragmatic hernia of the stomach through an old gunshot wound of the diaphragm.

10. A patient who had a distinct chill, fever and all the symptoms which one would expect in an early chest involvement, but without any characteristic findings in the chest, later, upon physical examination, while under a short period of observation, presented abdominal rigidity and was transferred to the surgical service. At operation two pieces of wire were removed from his stomach and, by esophagos-

copy, a thermometer case was taken from the esophagus.

These ten cases will no doubt convey to any one the necessity for close observation and special study of physical ailments in the insane. The mortality rate per population of the hospital showed a marked drop six years ago following the establishment of such a service, and it has remained at this lower level ever since.

In conclusion, I believe that all hospitals for the insane should have a separate department for the care of somatic diseases. This service also is extended for all employees and out-patients.

Many opportunities for scientific study of medical and surgical cases present themselves, under these conditions, in an institution of this kind, that is, a well-equipped department devoted exclusively to this work.

The relations of the physical to the mental, and *vice versa*, and the intimate and intricate associations and connections between these two can be better understood under these ideal surroundings.

Last of all, the patients benefit by this system in making their adjustment toward their environment, whether it be parole, discharge to home life, or a hospital life, with a freedom of physical distress.

3624 *Davis Street, Northwest.*

Correspondence

Removing Pistons Hung in Record Syringes.

RICHMOND, VA., *June* 4, 1926.

TO THE EDITOR:

Sometime ago the writer had trouble from the locking of the pistons in Record syringes used for blood transfusion. The following method seems safe and satisfactory, especially when used before the blood has dried in the syringe:

The offending syringe is taken to the auto service station, where compressed air is available. It is wrapped, except for the needle fitting, in 10 to 12 thicknesses of old newspaper, in order to protect one from the possibility of being cut by flying glass in case the syringe explodes from the pressure. Then using the valve stem of a tire over the needle fitting, the air is turned into the syringe.

In all cases so far attempted the piston is immediately expelled. J. O. FITZGERALD, JR.

The County Society

For Better Acquaintance.

With a view to arousing and maintaining interest in the COUNTY SOCIETY, it is requested that, as far as possible, every county in the State should have a county society.

Any county with three or more eligible physicians may organize and apply for a charter from the State Society, thus securing the privilege of representation in the House of Delegates of the State Society at its annual meetings.

Only one component society shall be organized in any county.

County societies which have been inactive should re-organize. Upon request, your Councilor, the President or Secretary of the State Society will help in any way possible.

Inquiries addressed to the MEDICAL SOCIETY OF VIRGINIA, 104½ West Grace Street, Richmond, will have prompt attention.

Do you know that fellowship in the American Medical Association, the largest association of its kind in the world, is dependent upon membership in your State Society, and that membership in your State Society is dependent upon membership in your County Society?

Each County Society shall have general jurisdiction over the medical matters in the County.

Dues in the State Society are five dollars a year, the fiscal year beginning January 1. Without other charge, members receive the "Virginia Medical Monthly," official organ of the Society, and legal defense if sued for alleged civil malpractice.

The Reference Committee of the American Medical Association on Reports of the Board of Trustees and Secretary of that Association, in commending the report of its secretary, Dr. Olin West, states that "The County Society should be the fountain head of scientific work. The secretary very properly points to a danger in this connection. The scientific program of a county society should accomplish two distinct things, instruct the membership and develop in members the scientific ability and the ability to express themselves. If these programs do not bring to the society those who are qualified to speak and able to speak, instruction will suffer. On the other hand, if this is done to the exclusion of discussion by members generally, there will be no development. State associations and county societies will do well to give special study to this problem."

Meetings of the County Societies should be made attractive so as to hold the interest of

the individual member. A program committee may arrange for the discussions of books and journals, and some one may be appointed to give a case report. Part of the time at each meeting might very profitably be given to getting better acquainted, for

"When you get to know a fellow, and you understand his ways,
Then his faults won't really matter, for you'll find a lot to praise."

Womans Auxiliary

To the Medical Society of Virginia

Advantages of Organized Effort Among the Women.

At the request of the officers of the Auxiliary, this space has been set aside for communications from them regarding matters of interest, both to the profession and to the women members of their families.

All communications should be addressed to Mrs. E. F. Truitt, Secretary, Westover Avenue, Norfolk, Virginia.

The President of the American Medical Association, Dr. Wendell Phillips, in speaking to the Woman's Auxiliary, in Dallas, Texas, said his first "Auxiliary" to success was his wife, but he had found there was much good work being done by the doctors' wives besides courage, loyalty and devotion to their husbands.

He complimented the Woman's Auxiliary for their splendid work in helping to stamp out a deadly menace to public health that was creeping in on the States of Virginia and Texas. In both cases, the Woman's Auxiliary had been called upon and rendered valuable assistance.

There was much applause when the Virginia Auxiliary's report was read, telling of the stand our women had taken with their husbands in fighting that menace (quackery) and of our victory in Virginia.

Congratulations, Virginia Women!

Let us get busy! Our next goal is to place "*Hygeia*" in every school; to co-operate with the profession, both individually and collectively, in every way and to co-operate with existing health and welfare organizations. They need us. Let's offer our services.

Educate the public in health matters. Tell the true story of medicine to the public.

Urge periodical health examinations, made by regular physicians and not by commercial organizations.

If your county is not organized, please get together at once.

Alice Leigh,
(Mrs. Southgate Leigh)
President.

The Truth About Medicine

In addition to the articles enumerated in our letter of March 27th, the following have been accepted:

Eastman Kodak Co.
- Tetrabromophenolphthalein Sodium Salt—Eastman.
- Tetraiodophenolphthalein Sodium Salt—Eastman.

Lederle Antitoxin Laboratories
- Scarlet Fever Streptococcus Toxin for the Dick Test—Lederle.

H. K. Mulford Co.
- Pituitary Body Anterior Lobe Desiccated—Mulford.
  - Tablets Pituitary Body Anterior Lobe Desiccated—Mulford, 2½ grains.
  - Tablets Pituitary Body Anterior Lobe Desiccated—Mulford, 5 grains.
- Scarlet Fever Streptococcus Antitoxin (Concentrated).
- Sterile Solution of Anterior Lobe Pituitary—Extract—Mulford.
  - Ampules Sterile Solution of Anterior Lobe Pituitary Extract—Mulford, 1 cc.

Parke, Davis & Co.
- Corpora Lutea Soluble Extract—P. D. & Co.
  - Ampules Corpora Lutea Soluble Extract—P. D. & Co., 1 cc.

Swan-Myers Co.
- Ampules Dextrose 50%, 50 cc.—Swan-Myers.

Wilson Laboratories:
- Pituitary Solution U. S. P. X. Obstetrical.
  - Ampoules Pituitary Solution Solution U. S. P. X. Obstetrical—Wilson, 0.5 c.c.
  - Ampoules Pituitary Solution, U. S. P. X. Obstetrical—Wilson, 1 c.c.
- Pituitary Solution Surgical
  - Ampoules Pituitary Solution Surgical—Wilson, 1 c.c.

NEW AND NON-OFFICIAL REMEDIES

Mead's Powdered Lactic Acid Milk (Cultured).—A modified milk product prepared by fermenting whole milk with *B. acidi-lactici*, drying and powdering. Each 100 Gm. contains approximately protein, 29 Gm.; carbohydrate, 26.4 Gm.; fat, 28.8 Gm.; free lactic acid, 3 Gm.; and ash, 6 Gm. This preparation is proposed for overcoming the so-called buffer action of cow's milk in the infant's stomach. Mead Johnson & Co., Evansville, Ind.

Mead's Powdered Lactic Acid Milk (Acidified With Lactic Acid U. S. P.)—A modified milk product, prepared by adding lactic acid U. S. P. to whole milk, drying and powdering. Each 100 Gm. contains approximately: protein 26.4 Gm.; carbohydrates, 34 Gm.; free lactic acid, 3 Gm., fat, 24 Gm.; and ash, 6 Gm. This preparation is proposed for overcoming the so-called buffer action of cow's milk in the infant stomach. Mead Johnson & Co., Evansville, Ind.

Pollen Extracts—Mulford.—In addition to the products listed in New and Non-official Remedies in Jour. A. M. A., June 6, 1925, p. 1734, the following are also marketed as fourth series in five glass syringes (doses 16 to 20, inclusive), each containing 1,000 protein units: Lamb's Quarters Pollen Extract—Mul-

ford; Ragweed Pollen Extract (Fall)—Mulford; Timothy Pollen Extract (Spring)—Mulford; Wormwood Pollen Extract—Mulford. H. K. Mulford Co., Philadelphia.

Concentrated Pollen Extracts—Swan-Myers (see Jour. A. M. A., May 30, 1925, p. 1634; Jan. 23, 1926, p. 277; Feb. 27, 1926, p. 625). These are marketed in 2 c.c. vials and in sets of five capillary tubes for diagnostic tests, each tube containing sufficient extract for one test. Swan-Myers Co., Indianapolis, Ind.

Scarlet Fever Streptococcus Antitoxin—Squibb (Jour. A. M. A., Jan. 16, 1926, p. 199). This product is also marketed in packages of 1 c.c. vials for the diagnostic blanching test containing sufficient toxin for ten tests. E. R. Squibb & Sons (Jour. A. M. A., Apr. 10, 1926, p. 1131).

Typhoid-Paratyphoid Prophylactic—Cutter. A typhoid vaccine (New and Non-official Remedies, 1925, p. 360), marketed in packages of three vials; in packages of one 20 c.c. vials, and in packages of one syringe containing a mixture of typhoid bacilli and paratyphoid bacilli types A and B. Cutter Laboratory, Berkeley, Cal.

Parke, Davis & Co.'s Standardized Cod Liver Oil.—It has a content of fat soluble vitamin-A which is not less than 440 units per Gm. and an antirachitic potency of not less than 59 units per Gm. Parke, Davis & Co., Detroit.

Pituitary Solution U. S. P. X.—Wilson.—An extract of the posterior lobe of the pituitary body of cattle, preserved by the addition of chlorbutanol. It is standardized to have the strength of solution of pituitary U. S. P. For a discussion of the actions, uses and dosage, see Pituitary Gland, New and Non-official Remedies, 1925, p. 260. The product is marketed in 0.5 and 1 c.c. ampules. Wilson Laboratories, Chicago.

Scarlet Fever Streptococcus Toxin for the Dick Test—Lederle.—It is prepared by growing the scarlet fever streptococcus in broth (see Diphtheria Immunity Test. Jour. A. M A., Jan. 16, 1926, p. 199). It is marketed in packages of one vial containing diluted toxin sufficient for ten tests; in packages of one vial containing concentrated toxin sufficient for 100 tests and a vial of diluent. Lederle Antitoxin Lederle Antitoxin Laboratories, New York.

Scarlet Fever Streptococcus Toxin—Lederle.—It is prepared by growing the scarlet fever streptococcus in broth (see Scarlet Fever Immunity Test, Jour. A. M. A., Jan. 16, 1926, p. 199). It is marketed in packages of four vials of diluted toxin containing, respectively, 500, 1,000, 2,500 and 5,000 skin test doses; in packages of four 20 c.c. vials of diluted toxin containing, respectively, 500, 1,000, 2,500 and 5,000 skin test doses per c.c.; in packages of forty vials of diluted toxin providing ten immunizations. Lederle Antitoxin Laboratories, New York.

Ampules Dextrose 50%, 50 c.c.—Each ampule contains 50 c.c. of a fifty per cent solution of dextrose U. S. P. Swan-Myers Co., Indianapolis. (Jour. A. M. A., April 17, 1926, p. 1213).

PROPAGANDA FOR REFORM

Iron and Blood Regeneration.—"The history of anemia treatment with drugs is indeed a tale to make the judicious grieve." On the whole, iron seems to enjoy the most constant favor by practicing physicians. The clinical control of the treatment of anemia is difficult and the number of variables almost infinity. As a result, widely differing views as to the efficiency of iron preparations have been recorded. Less than four years ago, Whipple wrote that among the potent factors exerting a positive influence of hemoglobin formation, stands first blood, meat and cooked liver, hemoglobin and butter fat. He found iron and arsenic in the common drug preparations inert under the conditions of his experiment. Williamson and Ets subsequently concluded that inorganic iron is absorbed and may be found in the liver and spleen, but is not converted into hemoglobin and that animals made anemic by bleeding did not recover more rapidly when inorganic iron is given. Williamson believes that the efficiency of food iron is pronounced. Recently, Barkan found that digestive ferments do not liberate iron from hemoglobin. This means that, if the pigment facilitates blood regeneration, it is not so much iron as the complexes with which it is associated that determines hematopoietic efficacy. (Jour. A. M. A., April 3, 1926, p. 1075).

Tuberculene, A Fraudulent Consumption Cure.—Tuberculene has been exploited from Danville, Ill., by one Mrs. D. J. Murrman, under the trade name Tuberculene Mfg. Co., as a "lung restorer." A fraud order has been issued against the Tuberculene Mfg. Co., debarring it from the mails. Tuberculene was a mixture of creosote, rock candy syrup, glycerin, syrup of wild cherry and coloring matter. In the trial, the government pointed out that creosote preparations had long been used in the treatment of certain symptoms in cases of pulmonary tuberculosis, but that it has been definitely established that they do not destroy the tubercle bacilli. (Jour. A. M. A., April 3, 1926, p. 1089).

The Zoalite Lamp.—This is a device for producing radiant heat for therapeutic purposes. The heat is produced by a "resistor," which is heated by an electric current. The radiant energy emitted by this unit is not unlike the radiant energy produced by an incandescent body such as a bar of hot iron or the filament of a tungsten lamp. The therapeutic value of the Zoalite is precisely that of other sources of radiant heat. (Jour. A. M. A., April 3, 1926, p. 1091).

Gonococcus Vaccine.—It is probable that gonococcus vaccine in some form or other is still used by physicians in the treatment of gonorrhea and its complications. There is no question, however, that this practice is far less extensive than formerly. The use of gonococcus vaccine for curative treatment appears to be sharing in the decline from popular favor of bacterial vaccines in general. Gonococcus serum and gonococcus vaccine were omitted from New and Non-official Remedies because the Council on Pharmacy and Chemistry concluded that there was no evidence to show that these preparations had therapeutic value. (Jour. A. M. A., April 3, 1926, p. 1091).

Psycosulphene.—According to the manufacturer, McNickle & Co., Spring Hill, Mass., Psycosulphene is "a Product of Chemical Research," which promotes circulation through the feet, and those who are suffering from kidney trouble, run down constitution, nervous disorders are instructed to drop a small pinch into each shoe each day. Newspaper advertisements contain testimonials of the wonders which Psycosulphene is asserted to have performed. The A. M. A. Chemical Laboratory reports that from an examination it appears that Psycosulphene is composed essentially of sulphur, 5 parts; starch, 15 parts; borax, 40 parts; baking soda, 40 parts. (Jour. A. M. A., April 10, 1926, p. 1150).

Kaolin in Intestinal Disease.—For centuries Chinese physicians have used kaolin in fevers and intestinal disorders, including cholera. Recent experiments seem to confirm the scientific basis of its use. Work in vitro has demonstrated that it is not

an antiseptic agent, but that in fluid mediums, if kept in motion, kaolin will carry down with it large numbers of bacteria. More than this, it combines with the toxic products of cholera, of the typhoid dysentery group of organisms, and, apparently, with putrefactive and proteolytic bacteria. Recent workers have successfully employed kaolin in Asiatic cholera, bacillary dysentery, chronic ulcerative colitis and acute enteritis. (Jour. A. M. A., April 17, 1926, p. 1217).

Idosan Not Acceptable for N. N. R.—Idosan is an iron preparation manufactured in Denmark. According to the distributor, Duomares Corporation, New York, the active medicinal ingredient is "colloidal iron." Though claimed to be novel, Idosan appears to be essentially similar to the colloidal ferric hydroxide preparation, which was in vogue as "dialyzed iron" many years ago. The Council on Pharmacy and Chemistry found Idosan unacceptable for New and Non-official Remedies, because the statement of its composition is indefinite and incorrect and because it is an unoriginal preparation marketed under a noninforming name. (Jour. A. M. A., April 17, 1926, p. 1233).

Benzyl Benzoate for Therapeutic Use—VanDyk & Co., Twenty Per Cent Aromatized Suspension Made from Benzyl Benzoate (VanDyk & Co.), and Benzyl Alcohol—VanDyk & Co.

Omitted From N. N. R.—The Synthetic Drug Corporation (formerly the United Synthetic Chemical Corporation), markets a brand of benzyl benzoate—Benzyl Benzoate for Therapeutic Use (VanDyk & Co.)—and a preparation of it—Twenty Per Cent Aromatized Suspension of Benzyl Benzoate (VanDyk & Co.) The advertising for these was based on the enthusiastic reports that were published when benzyl benzoate was first used experimentally in medicine. In consideration of the revised estimate of benzyl benzoate, the Council on Pharmacy and Chemistry urged the distributor of these preparations to revise the advertising claims. This revision was not made and, therefore, the preparations have been omitted from New and Non-official Remedies. Benzyl Alcohol—VanDyk & Co., was accepted for New and Non-official Remedies as a brand of benzyl alcohol—N. N. R. Recently, the distributors—Synthetic Drug Corporation—have adopted the name, "Benzylol" for it and claim this name as a "word mark." The Council on Pharmacy and Chemistry omitted the product from New and Non-official Remedies because it is marketed under a name which the Council cannot recognize. (Jour. A. M. A., April 17, 1926, p. 1233).

Bismuthal Omitted from N. N. R.—Bismuthal (Langley & Michaels Co., San Francisco), is a mixture containing an insoluble bismuth citrate and pepsin as its active ingredients, with hydrochloric acid and lactic acid to protect the pepsin. It was accepted for New and Non-official Remedies in 1909, when an extended clinical practice of prescribing mixtures of a bismuth preparation and pepsin justified its acceptance. During recent years, the prescribing of pepsin in combination with other therapeutic agents has been generally abandoned. The Council omitted Bismuthal from New and Non-official Remedies on the ground that the routine combination of a bismuth compound and pepsin in the form of a stock preparation is not in the interest of rational therapy. (Jour. A. M. A., April 17, 1926, p. 1233).

Starch Digestants.—Recent studies of salivary digestion show that seventy-six per cent of the starch of mashed potatoes and fifty-nine per cent of the starch of bread was converted to maltose, an additional percentage being changed to dextrin. If food is properly masticated and starch digestion allowed to proceed fifteen minutes or so in the stomach, almost as much starch is broken down as when digestion can proceed for a long time. For this the high amylase content of saliva is responsible. The use of amylase preparations in medicine has lost its former vogue. With starch presented in readily digested form, there is little need for salivary digestants—that is, the responsibility for proper digestion of starch is being transferred to the technique of the food factory and the kitchen instead of the purveyor of digestive ferments. (Jour. A. M. A., April 24, 1926, p. 1288).

Book Announcements

Fortieth Annual Report of the Bureau of American Ethnology. To the Secretary of the Smithsonian Institute. 1918-1919. Washington. Government Printing Office. 1925. 664 pages. Cloth.

Medical Diagnosis for Student and Practitioner. By CHARLES LYMAN GREENE, M. D., St. Paul, Formerly Professor of Medicine and Chief of Medical Clinic in the University of Minnesota; Chief of Staff, St. Luke's Hospital; Consulting Physician, State Hospital for Crippled and Deformed Children, etc. Sixth Edition, Revised and Enlarged. Philadelphia. P. Blakiston's Son & Company, 1012 Walnut Street. 1926. 8vo. 1,468 pages, with 14 colored plates and 709 other illustrations. Cloth. Price, $12.00.

Facts on the Heart. By RICHARD C. CABOT, M. D., Professor of Medicine and of Social Ethics at Harvard University. Philadelphia and London. W. B. Saunders Company. 1926. Octavo of 781 pages with 163 illustrations. Cloth. Price, $7.50 net.

Clinical Features of Heart Disease. By LEROY CRUMMER, M. D., Professor of Medicine, University of Nebraska. An Octavo book of 353 pages. This was announced in our June, 1925, issue. The publishers, Paul B. Hoeber, Inc., New York City, state that the price, formerly $3.00, is now $4.00.

Gould and Pyle's Pocket Cyclopedia of Medicine and Surgery. Based upon the Fourth Edition of Gould and Pyle's Cyclopedia of Practical Medicine and Surgery. A Useful Book of Reference. Third Edition, revised and enlarged, and edited by R. J. E. SCOTT, B. C. L., M. D., Fellow of the New York Academy of Medicine; formerly Attending Physician to the Bellevue Dispensary; Editor of several books, etc. Philadelphia. P. Blakiston's Son and Company, 1012 Walnut Street. 922 pages. Leather. Pocket size. Price, $2.50 for plain and $3.00 for thumb index.

Young's Practice of Urology. Based on a study of 12,500 cases. By HUGH H. YOUNG, M. D., and DAVID M. DAVIS, M. D., Johns Hopkins University. With the collaboration of FRANKLIN P. JOHNSON. Two octavo volumes, totalling 1,484 pages with 1,003 illustrations, 20 being color plates by WILLIAM P. DIDUSCH. Philadelphia and London. W. B. Saunders Company. 1926. Per set: Cloth, $25.00 net.

Handbook of Diseases of the Rectum. By LOUIS J. HIRSCHMAN, M. D., F. A. C. S., Ex-Chairman, Section on Gastro-Enterology and Proctology, A. M. A.; Professor of Proctology, Detroit College of Medicine, etc. Fourth Edition Revised and Re-written. St. Louis. The C. V. Mosby Company. 1926. 8vo. 403 pages with 252 illustrations, mostly original, and five colored plates. Cloth. Price, $6.50.

Modern Methods of Amputation. By THOMAS G. ORR, M. D., F. A. C. S., Professor of Surgery, University of Kansas. St. Louis. The C. V. Mosby Company, 1926. 8vo. of 117 pages, with 125 illustrations. Cloth. Price, $3.50.

Therapeutics, Materia Medica and Pharmacy. The Special Therapeutics of Diseases and Symptoms, the Physiological and Therapeutical Actions of Drugs, the Modern Materia Medica, Official and Practical Pharmacy, Prescription Writing, and Antidotal and Antagonistic Treatment of Poisoning. By SAM'L O. L. POTTER, M. D., M. R. C. P. London. Formerly Professor of the Principles and Practice of Medicine in the Cooper Medical College of San Francisco; Author of the "Quiz Compends of Anatomy and Materia Medica," etc. **Fourteenth Edition.** Revised by R. J. E. SCOTT, B. C. L., M. D., New York, Fellow of the New York Academy of Medicine; Editor of various books. Philadelphia and London. P. Blakiston's Son and Company, 1012 Walnut Street. 8vo. of 972 pages. Cloth. Price, $8.50.

Diseases of the New-Born. A Monographic Handbook. By JOHN A. FOOTE, M. D., Professor of Diseases of Children, Georgetown University Medical School. Including chapters by Prentiss Willson, M. D., James M. Moser, M. D., William F. O'Donnell, M. D., Frederick J. Eichenlaub, M. D., and John F. O'Brien, M. D., of the Faculty of Georgetown University Medical School, Philadelphia, London and Montreal. J. B. Lippincott Company. 8vo. of 231 pages with 85 illustrations. Cloth. Price, $5.00.

The Thyroid Gland. By CHARLES H. MAYO, M. D., Professor of Surgery, University of Minnesota, Mayo Foundation, Rochester, Minn., and HENRY W. PLUMMER, M. D., Professor of Medicine, University of Minnesota, Mayo Foundation, Rochester, Minn. Series Number Four of the Beaumont Foundation Lectures. Given under the auspices of the Wayne County Medical Society, Detroit, Michigan, 1925. Published April, 1926, by the C. V. Mosby Company. St. Louis. Small 8vo of 83 pages. Cloth. Price, $1.75.

The International Medical Annual. A Year-Book of Treatment and Practitioner's Index. By a number of contributors. Forty-Fourth Year. 1926. New York. William Wood and Company. 8vo of 555 pages. Cloth. Price, $6.00.

Parenthood and the Newer Psychology. Being the Application of Old Principles in a New Guise to the Problems of Parents with Their Children. By FRANK HOWARD RICHARDSON, M. D., Author of "Simplifying Motherhood," "Malnutrition and the Child," etc. G. P. Putnam's Sons. New York and London. The Knickerbocker Press. 1926. 8vo of 200 pages. Cloth. Price, $1.75.

Text-Book of Materia Medica for Nurses. Compiled by LAVINIA L. DOCK, R. N., and JENNIE C. QUINBY, R. N. Eighth Edition, Re-written and Revised according to the Standard Curriculum. G. P. Putnam's Sons. New York and London. The Knickerbocker Press. 1926. 8vo of 317 pages. Cloth. Price, $2.25.

Diseases of the Skin. By RICHARD L. SUTTON, M. D., LL. D., F. R. S. (Edin.), Professor of Diseases of the Skin, University of Kansas School of Medicine; Dermatologist to the Atchison, Topeka and Santa Fe Hospital Association, and to the Christian Church Hospital. Sixth Edition. Revised and enlarged. St. Louis. C. V. Mosby Company. 1926. 8vo of 1303 pages, with 1147 illustrations and 11 colored plates. Cloth. Price, $12.00.

Collected Papers by the Staff of the Henry Ford Hospital. (First Series, 1915-1925). Paul B. Hoeber, Inc., Publishers. New York City. 1926. 8vo of 634 pages, with 151 illustrations and 42 charts. Cloth. Price, $8.00.

A Manual of Normal Physical Signs. By WYNDHAM B. BLANTON, M. D., Richmond, Virginia. Associate in Medicine, Medical College of Virginia. St. Louis. The C. V. Mosby Company. 1926. Small, 8vo. of 215 pages. Cloth. Price, $2.50.

Materia Medica and Therapeutics, Including **Pharmacy and Pharmacology.** By REYNOLD WEBB WILCOX, M. D., LL. D., D. C. L., Professor of Medicine (Retired) at New York Post-Graduate Medical School and Hospital; Consulting Physician to St. Mark's, to the Nassau, to the Ossinning, to the New Jersey State, and to the Eastern Long Island Hospital; Fellow of the American Association for the Advancement of Science, etc. Eleventh Edition. Revised in Accordance with the **U. S. Pharmacopoeia, X,** with **Index of Symptoms and Diseases.** Philadelphia. P. Blakiston's Son & Co., 1012 Walnut Street. 1926. 8vo. of 798 pages. Cloth. Price, $5.00.

A Bipolar Theory of Living Processes. By GEORGE W. CRILE. Edited by AMY F. ROWLAND. New York. The Macmillan Company. 1926. 8vo of 405 pages. Cloth.

Nursery Guide for Mothers and Children's Nurses. By LOUIS W. SAUER, Ph. D., M. D., Senior Attending Pediatrician, Evanston Hospital; formerly Attending Physician Chicago Infant Welfare, and Assistant Attending Physician Children's Memorial Hospital, Chicago. Second Edition. St. Louis. The C. V. Mosby Company. 1926. 12mo of 206 pages, illustrated. Cloth. Price, $2.00.

Public Health in Russia.

Three hundred and ninety-five million gold rubles for public health work during the current fiscal year is provided for in the budget of the Union of the Soviet Socialist Republics and those of the federated states, according to Isviestia of Moscow. This sum is twice as large as that provided in 1923-24. Isviestia further reports the establishment in Ukrainia in 1925 of twenty-four infant consultations in cities, 177 in rural districts, sixty day nurseries in cities, 324 in rural districts and eighteen milk kitchens. In Kharkov, Kiev, Odessa, and Ekaterinsolav, day nurseries were established for the care of children of university students.

Virginia Medical Monthly

FOUNDED BY LANDON B. EDWARDS, M. D., APRIL, 1874.
OWNED BY THE MEDICAL SOCIETY OF VIRGINIA.
PUBLISHED BY THE PUBLISHING COMMITTEE.
A. G. BROWN, Jr., M. D., Chairman, Richmond, Va.
B. R. TUCKER, M. D., Richmond, Va.
P. W. HOWLE, M. D., Richmond, Va.
E. L. KENDIG, M. D. Victoria, Va.
A. L. GRAY, M. D., Richmond, Va.
ALEX. G. BROWN, Jr., M. D., Editor.
AGNES V. EDWARDS, Business Manager and Secretary-Treasurer.

All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $2.00 per annum in advance.
Single Copies 20c.

Vol 53. JUNE, 1926 No. 3

Editorial

Rheumatism and Focal Infection.

"The throttling quinsey, 'tis my star appoints,
And rheumatisms I send to rack the joints."
Dryden: Palamon and Arcite.

Rheumatism, whatever the term originally meant, today is as much as ever a problem of internal medicine. Now, the term rheumatism, used in the light of present-day knowledge, carries a wide range of disease entities. But the basic thought, tied up in the primary cause and varied lines of pathology and symptomatology found in the general body, seems to warrant a comment on the fundamentals of this widespread complaint. If Dryden was able to guess the relation of the "throttling quinsey" to the "rheumatisms," which "rack the joints," long before science had, by proof, shown the relationship, the profession of today, in the light of present-day facts of this relationship, may well accept the establishment of this clinical association. Besides, physicians and specialists may well get together upon a common understanding of the fundamentals of the origin of "rheumatisms" wherever found. "Rheumatisms," as used by Dryden, may not be alone arthritis; may not be alone endocarditis; may not be alone herpes zoster; may not be alone iritis. "Rheumatisms," arising from one or several primary regions, may show pathologic changes that set up various symptoms of more or less special character according to the function and anatomy of the system, organs or structures involved. Pain, however, may be said to be the chief symptom in all rheumatisms that bring the patient limping and complaining to the physician.

Young tonsils, young hearts, young joints, appear to be particularly prone to a spectacular type of rheumatism which has been given various titles, such as acute rheumatic fever, acute inflammatory rheumatism, and acute articular rheumatism. The portal of entrance of organisms (for it is accepted now to be of microbic origin) is usually the oral or nasal orifice, and the site of usual primary implantation, and the propagation, at least to gross examination, is the tonsil. This phase of the disease may be lacking in striking symptoms, but clinical observation and the trend of modern opinion of the disease is, that here in the tonsil or neighboring structures, the earliest pathology of rheumatic fever, or articular rheumatism of a later period of the same general infection, is located. It is reasonable to think that tonsillitis is a negligible factor in the etiology in some cases of rheumatic fever because of the apparent absence of disease of the tonsils when first examined by the attending physician, and when, so often, patients and parents disclaim knowledge of an antecedent tonsillitis. This point may be well made in some cases. But in all, except a small proportion of cases, possibly, tonsil infection is an initial step to acute rheumatic arthritis.

Acute Rheumatic Fever in Children and Young Adults.

The specific cause of rheumatic fever is not easy to absolutely determine, especially if this means the identification of a specific organism. In fact, scientific procedure, according to the postulates of Koch who laid down the rules for scientific investigation, can not be satisfied in acute rheumatic fever. The specific germ has not been identified. The claims, according to Swift, of certain bacteriologists to the discovery of a specific organism as a cause of rheumatic fever have been refuted by certain other workers, based upon their work and conclusions. For the present, it seems that the identity of the specific etiologic organism is not proven. The streptococcus has, however, received serious and weighty consideration because of frequent and close affinity to the pathologic processes of the disease. But advocates of the streptococcus as the specific organism have been met by antagonists who have been unable to verify

such conclusions. The bacteriologic controversy goes on; "the causative agent of the disease has not been finally determined." But we know that rheumatic fever and active tonsillitis are commonly associated; we know that tonsillitis and endocarditis are commonly associated; we know that youth and young adult life is the usual age in which these associated diseases occur.

The Symptoms

I. Arthritis; II. Fever; III. Sweating; IV Heart.

Arthritis.—The disease first displays itself emphatically in the joints, in association with fever. Pain and tenderness in one or more joints, disclosing signs of acute inflammation, are evident in one or more joints. With early loss of function, involved joints evince pain, tenderness, swelling, redness, and local heat. Pain is usually the precursor of the other signs. The duration of the signs of inflammation in the affected joints varies from a few days to six or eight weeks. Following the passing of the violent symptoms, the joint function is tardy in returning to normal function; showing stiffness and pain on action. Malshapened joints result from prolonged inflammation or from dual infection, in some cases.

The migratory nature of the arthritis affords an interesting subject for speculation and comment. It seems to be true, from our observation, that joints more subject to trauma and overuse are the earliest in showing arthritic inflamnation; subsequent migration to neighboring joints seems to be more usual than otherwise.

Fever.—Without the effect on complications, the febrile course of inflammatory rheumatism is rather uniform. Beginning with a high fever of 103-4 F., it may remit to 101-2 F., during the course of a day. The febrile course is carried on by the involvement of one joint after another, as the joint infection spends itself at one site and the infection is taken to neighboring joint structures. In this manner through six weeks, febrile reactions emanate from involved joint infections. The uncomplicated arthritis is self-limited and tends to ultimate recovery without serious pathologic changes. But if the temperature curves act "queerly" either by persistence of fever for weeks or a month, with or without relapsing, one may suspect infection in other structures, besides arthritis.

Sweating.—Sweating, with a high objectionable and characteristic odor, marks the course of the disease. Severe and saturating sweats characterize the febrile course and form a phenomenon of importance to the nursing as well as the medical side of the case.

Heart.—Heart damage is a frequent complication of articular rheumatism. This damage may be in the myocardium as well as in the endocardium. The electrocardiograph study of heart action during and subsequent to acute stages of rheumatic fever, emphasizes, latterly, the serious injury suffered by the heart muscle, although endocaritis as a complication stands out as the chief fear of clinicians. The occurrence of serious myocardial degeneration takes place usually at the same time and by the same token. The onset of endocarditis, however, is the chief concern of the practitioner as he manages the treatment of rheumatic fever. The occurrence of systolic murmurs requires interpretation in order to obtain an early insight into the pathologic complications in the heart. Is the systolic murmur coming into the clinical picture, the expression of an endocarditis or myocarditis? Diastolic murmurs, too, must receive careful interpretation. Arrhythmia and tachycardia, extrasystoles, cyanosis, and other ominous signs are harbingers of grave cardiac complications. The heart, during and following rheumatic fever, demands careful scrutiny and judgment.

Enough has been hinted at to recall the general and constitutional effect of the infection called acute rheumatism.

Focal Infection and "Rheumatisms."

Chronic focal infection and chronic systemic disease is accepted also by present-day clinicians as an indisputable relationship, easily illustrated in the ordinary experience of daily practice. No more epochal advance in internal medicine has been achieved than the acceptance of this disease relationship. Much of chronic disease may be prevented; many "time-worn" symptoms may be relieved by the discovery and removal of the primary focus of infection, when the body is systemically affected by "rheumatisms" of one sort or another. The internist has a potent effect upon chronic "rheumatisms" by his laying bare the origin, and by removing same. Much the same

comes to his aid in restoring the body to easy function by the removal of the primary focus, as comes to the aid of the surgeon when he removes from the body offending pathology. If an appendix suppurates, its excision and drainage enable the body to return to normal. If one suffers herpes zoster, and infected tonsils (the probable cause) are extirpated. one quickly improves and returns to normal. All primary infection should be removed or drained off in order that the secondary depots may be better overcome by the "constitutional powers."

From chronic focal infections of the mouth and throat and the auxiliary sinuses, one may expect a wide range of systemic disease.

What are some of these "rheumatisms" setting up, in the general system, as the result of more or less chronic focal infection in the mouth, throat and auxiliary sinuses?

Acute chorea is one. This affection is of microbic origin. It produces choreic muscular movements, mental disturbances, endocarditis and anemia.

Thyroiditis is another. Acute and chronic thyroiditis give evidence of enlargement and serious disturbance of the function of the thyroid. The writer recalls a case of acute thyroiditis, secondary to acute tonsillitis, which ran a septic course to a fatal termination in ten days. The thyroid was extremely large and tender and the patient delirious to the end.

Acute and chronic iritis is another. What clinician has not seen in practice numbers of these cases? Only the removal of the primary focus enabled the eye to come back to fair condition.

Erythema nodosa is another. These polymorphic skin lesions are quite common in rheumatic fever. But they are also seen in chronic infection of the mouth or throat. The removal of the septic foci in our experience has uniformly brought recovery. One has only to recognize the relationship and to remove the primary focus in order to do much toward relieving the suffering patient.

Gonorrheal rheumatism is another. In no way may an illustration of this relationship be better brought forward. After an urethral infection with specific organism, the patient suffers a systemic "rheumatism" or arthritis which cripples him. This we call gonorrheal rheumatism.

Finally, arthritis and glomerulo-nephritis may find primary causes back in the chronic tonsillar or other focal infection.

Illegal Chiropractors.

Members of the profession in every locality of the State will be interested in the following synopsis of the proceedings and results obtained in the case violation of the "Medical Practice Act" by an illegal chiropractor. Not only does such action give satisfaction to the local profession in Richmond, but also serves as an example of what may be accomplished in any locality or community under like circumstances. It seems only necessary for the profession to initiate action, in the case of known transgressors of this act, by bringing to the attention of the Commonwealth's Attorney the identity of persons known to be violating this law, in order to get an arraignment before the proper court. This officer of the State in Richmond, assisted and supported by a zealous member of the local profession, secured the conviction of the offender in due course.

The work done in Richmond should be commended and applauded by the profession for the successful attack upon pernicious and illegal practitioners, not so much for the good that will accrue to regular medicine, as for the great protection of the public against vicious and malevolent methods of endless harm and danger.

SYNOPSIS OF PROCEEDINGS VS. MISS REMA M. KING, OF RICHMOND, VA.

Proceedings against Miss Rema M. King, Richmond, Va., in the Hustings Court of the City of Richmond, pertaining to her practicing medicine in violation of Section 1618, Code of Virginia, 1919, known as the "Medical Act," Chapter 68. A copy of the records of the Hustings Court, as attested by Walter Christian, clerk, follows:

July 18th, 1925, City of Richmond vs. Miss Rema M. King. Appealed from Police Justice Court, doing business without license. Prosecuted by the City Attorney and his assistant, and tried before a jury whose verdict was: "We the jury find the defendant guilty of practicing without a license and fix a fine of $10 00 and cost." Miss King's attorneys entered a motion to appeal the motion to the Supreme Court of Appeals of Virginia, and at the same time giving bond for $250.00 to the court for recognition on October 5, 1925. Before October 5th, Miss King, with her attorney, appeared in court and paid the fine of $10.00 and cost.

In the Hustings Court of City of Richmond, Va., January 14, 1926: The Commonwealth vs. Miss Rema M. King. Appealed from Police Court, for practicing medicine without a license. Prosecuted by the Commonwealth's Attorney, and a jury returned a verdict as follows: "We the jury find the accused guilty as charged and fix her punishment at a fine

of $50.00 and cost." January 15, 1926, the defendant appeared in court and paid the fine of $50.00 and costs.

In the Hustings Court of City of Richmond, February 19, 1926: Commonwealth vs. Miss Rema M. King. Appealed from Police Court, practicing medicine without a license. Tried before a jury and prosecuted by the Commonwealth's Attorney, which jury returned a verdict as follows: "We the jury find the accused guilty and fix her punishment in a fine of $300.00 and cost." The defendant, through her attorney, appealed the decision of the court, whereof a bond of $250.00 was required by the court for Miss King's appearance in court on February 25, 1926.

March 13, 1926: The defendant appeared in court and was allowed to withdraw the motion to set aside the verdict of the jury, which was rendered on the 19th day of February, 1926, and Miss Rema M. King did pay to the court the fine of $300.00 and cost.

In the Hustings Court of City of Richmond, Va., April 19, 1926: Commonwealth vs. Rema M. King. Appealed from Police Justice's Court, practicing medicine without license: "A nolle prosequi is entered by the Attorney for the Commonwealth, with the leave of the court, in this case," to the effect that Miss King would not practic chiropractor manipulation in the State of Virginia, nor advertise herself in any way or manner, and was cautioned to remove all signs and advertisements pertaining thereto.

Miss Rema M. King obtained a license from the Commissioner of Revenue on May 1, 1926, to practice massage; which was granted.

On the first two appearances of Miss Rema M. King in Police and Hustings Court, and at the same time a similar warrant was issued against one C. McConney, a colored chiropractor practitioner. McConney was fined in both instances by the Police Court Justice and the case was appealed by his attorneys to the Hustings Court. His first appeal was not gone into, because of the disposition of the case against Miss Rema M. King. Upon his second appeal in Hustings Court, he agreed to leave the State, which he did.

At the present time there are no chiropractor practitioners practicing medicine in Richmond in violation of the State law pertaining to the practice of medicine.

News Notes

Medical College of Virginia Finals.

The closing exercises of the Medical College of Virginia, this year, were of more than usual interest. They opened with the usual "Stunt Night" by the students, on Saturday, the 29th of May, and from that time to the closing exercises, there was something of interest and pleasure for the alumni as well as the new graduates. The baccalaureate sermon was preached by Rev. Beverley Tucker, D. D., at St. Paul's Episcopal Church.

The outstanding feature of this year's exercises was the installation of William Thomas Sanger, Ph. D., as president of the College. The faculty and students, all capped and gowned, marched from the College through the Capitol Square to the Lyric Theatre, where the inaugural exercises were held on May 31st, at 11 o'clock. Music for this occasion was furnished by the College Orchestra. In the early part of that afternoon, Dr. Sanger, the new president, held a public reception at the Richmond Hotel, and this was followed at 6:30 by an Alumni-Inauguration dinner at Commonwealth Club.

The annual Alumni Association meeting was held on June 1st, with Dr. Greer Baughman, Richmond, the president, in the chair, and Mr. L. C. Bird, also of Richmond, at the secretary's desk. Officers elected for the coming year are: President, Dr. Charles Phillips, Richmond; vice-presidents, H. F. Sommarbahl, D. D. S., Roanoke; James H. Smith, M. D., Richmond; Mr. H. T. Haley, Tazewell; and Miss Hildred Bauserman, Richmond; treasurer, Dr. F. H. Beadles, Richmond. The secretary, as usual, is to be named by the executive committee.

Following the meeting of the alumni, there was an old-fashioned Brunswick stew, with later a baseball game between the seniors and alumni faculty, with medical and dental clinics for the more sober-minded.

At 8 P. M., June 1st, were held the final exercises at the City Auditorium, on which occasion, the address of the evening was made by Rolvix Harlan, Ph. D., of the University of Richmond. The presentation of diplomas and conferring of degrees was by the deans of the various schools. Exercises were brought to a close with the annual reception and dance at the Commonwealth Club. There were 81 graduates in medicine, 16 in dentistry, 34 in pharmacy, and 16 in nursing.

The list of graduates in the School of Medicine, with hospital appointments already announced, follows:

Memorial Hospital, Richmond—Drs. Webster Barnes, Gargatha; James R. Bailey, Keysville; Frazier C. Bedsaul, Galax; O. C. Campbell, Princeton, W. Va.; John M. Crymes, South Hill; J. Frank Folk, Durbin, W. Va.; J. Romond Grinels, Grinels; A. A. Karan, Brooklyn, N. Y.; John J. McDonald, Richmond; Donnie M. Royal, Salemburg, N. C.; Maurice Rosenthal, Richmond; Jos. K. Rowland, Princeton, W. Va.; Henry L.

Townsend, Manquin; Harry Walker, La Crosse; Louis Wachtel, Brooklyn, N. Y.

Johnston-Willis Hospital, Richmond—Drs. Lewis W. Angle, Rocky Mount; B. Herman Bailey, Keysville; Richard B. Easley, Richmond.

Retreat for the Sick, Richmond—Drs. William R. Morton, Oxford, N. C., and Bruce L. Randolph, St. Brides.

St. Elizabeth's Hospital, Richmond—Dr. William R. Counts, Welch, W. Va.

St. Luke's Hospital, Richmond—Dr. George O. Martin, Cullen.

Stuart Circle Hospital, Richmond—Dr. George G. Chiles, Strasburg.

Tucker Sanatorium, Richmond—Dr. James Asa Shield, Hampton.

George Ben Johnston Memorial Hospital, Abingdon—Dr. Lewis A. Law, Sandy River.

Elizabeth Buxton Hospital, Newport News—Drs. Edward L. Boone, Rich Square, N. C., and William M. Dick, Newport News.

Norfolk Protestant Hospital, Norfolk—Dr. Harry Goldstein, Erie, Pa.

St. Vincent's Hospital, Norfolk—Dr. Lawrence B. Kelleher, Richmond.

Petersburg Hospital, Petersburg—Dr. Gilbert A. Daniel, Athens, W. Va.

Lewis-Gale Hospital, Roanoke—Drs. Frederick F. Davis, Roanoke, and Walton F. Mitchell, Stewartsville.

Franklin Square Hospital, Baltimore, Md.—Dr. Allen W. Kelly, Taneytown, Md.

St. Agnes Hospital, Baltimore, Md.—Dr. William P. L. McBride, Hampton.

Mercy Hospital, Baltimore, Md.—Dr. Emory V. Jordan, Charleston, W. Va.

Beth Moses Hospital, Brooklyn, N. Y.—Dr. Morris Thomas, Brooklyn, N. Y.

Charleston General Hospital, Charleston, W. Va.—Dr. Thomas Braxton Gordon, Appomattox.

Mountain State Hospital, Charleston, W. Va.—Dr. Roy M. Rhodes, Williamson, W. Va.

McMillan Hospital, Charleston, W. Va.—Dr. William F. Work, Blue Creek, W. Va.

Eloise Hospital, Detroit, Mich.—Dr. A. J. Hollander, Brooklyn, N. Y.

Cumberland General Hospital, Fayetteville, N. C.—Dr. Ernest C. Bennett, Clinton, N. C.

Hazelton General Hospital, Hazelton, Pa.—Drs. Guy C. Amory, Grafton, and Harvey Lee Griffin, Fairmont, N. C.

Gouverneur Hospital, New York, N. Y.—Dr. Clifton W. Henson, Richmond.

Grasslands Hospital, Valhalla, N. Y.—Dr. Hugh O. Pearson, Wilson, N. C.

Harlem Hospital, New York, N. Y.—Dr. Pasquale F. Montilli, New York, N. Y.

Naval Hospital, New York, N. Y.—Dr. Jos. Berkeley Gordon, Richmond.

Ancon Hospital, Ancon, Canal Zone—Dr. Lewis C. Lush, Winterpock.

St. Margaret Hospital, Pittsburgh, Pa.—Dr. George B. Hudock, Oliver, Pa.

Pittsburgh Hospital, Pittsburgh, Pa.—Dr. Helen Magley, Cincinnati, Ohio.

Rex Hospital, Raleigh, N. C.—Drs. William H. Drewry, Drewryville, and Rupert R. Weathers, Wendell, N. C.

St. Mary's Hospital, Rochester, N. Y.—Dr. J. Howard Childrey, Dumbarton.

Mayo Clinic, Rochester, Minn.—Dr. Grace B. Rollins, Richmond.

Letterman General Hospital, San Francisco, Cal.—Drs. Fletcher E. Ammons, Hampton, and James B. Smith, Jr. Sharps.

St. Luke's Hospital, San Francisco, Cal.—Drs. Andrew S. Davis, Chincoteague Island, and Gordon Hastings, Emporia.

Presbyterian Hospital, San Juan, Porto Rico—Drs. R. R. Molina and Luis M. Morales, both of San Juan, Porto Rico.

Guyan Collieries Corps Hospital, Tamcliff, W. Va.—Dr. Jack Smiley, Salem.

Walter Reed General Hospital, Washington, D. C.—Drs. Richard A. Bowen, II, South Richmond, and Marion W. Ransone, Hampton.

Welch General Hospital, Welch, W. Va.—Dr. Edward W. Wood, Claremont.

City Memorial Hospital, Winston-Salem, N. C.—Dr. John C. Sasstevens, Hamptonville, N. C.

West Palm Beach Sanatorium, West Palm Beach, Fla.—Dr. Marion H. Seawell, Richmond.

Gordon Keller Hospital, Tampa, Fla.—Mr. Louis S. Leo, undergraduate.

James Walker Memorial Hospital, Wilmington, N. C.—Mr. W. S. Jones, undergraduate.

City Home Hospital, Richmond—Messrs. E. J. Haden, E. C. Jamison and P. A. Shelburne, undergraduates.

City Jail Hospital, Richmond—Mr. Percy P. Pharr, undergraduate.

Grace Hospital, Richmond—Messrs. John W. Parker and Sidney Johnston, Richmond, undergraduates.

Hygeia Hospital, Richmond—Mr. Seth Gayle, Jr., undergraduate.

Other graduates in medicine are:

Dr. Hadden C. Alexander, Jr., Tunstall.
Dr. Abram J. Blechman, Baltimore, Md.
Dr. William T. Burch, McDonough, Md.
Dr. Harvie D. Coghill, Richmond.
Dr. James E. Feraca, New York, N. Y.
Dr. Ashby D. Ferrell, Talcott, W. Va.
Dr. Edward W. Gray, Richmond.
Dr. S. E. Gunn, Sutherland.
Dr. James P. Jones, Jr., Richmond.
Dr. William J. Killius, Charleroi, Pa.
Dr. Max Kliger, New York, N. Y.
Dr. Thomas L. Lee, Kinston, N. C.
Dr. Jeannette T. Morris, Gainesville, Fla.
Dr. Aaron B. Spahr, Benhams.
Dr. Frank B. West, Vesta.

Koch's "Cancer Antitoxin."

As a number of inquiries have been made by our members relative to the so-called Koch's "Cancer Antitoxin," it seems to us wise to publish at this time an abstract of the statement made concerning it by the American Medical Association, under the heading of "Propaganda for Reform," in the May 8, 1926 issue of the *J. A. M. A.*, pages 1469-1472.

In 1918, William F. Koch, of Detroit, was graduated in medicine by the Detroit College of Medicine and Surgery. Less than a year after his graduation in medicine, Dr. Koch announced that he had "developed a real specific cure for cancer." Seven years have passed during which Dr. Koch has seen fit to keep the composition of his preparation to himself. During that time, *The Journal of the American Medical Association* has been unable to learn of a single instance in which a case of unquestioned malignant disease has been cured by the Koch treatment. On the other hand, information was received regarding individuals who "promptly died" after taking the treatment. At different times, the Wayne County (Detroit) Medical Society has appointed three committees to investigate Koch's cure. Each of the three reports has been unfavorable.

The Koch treatment has been commercialized and it seems evident that large sums of money have been spent in circularizing the profession and the public in the interest of the "cure." The latest move is the establishment of the imposingly named "Koch's Cancer Foundation," with William F. Koch as "director."

There has also been organized "Koch Laboratories, Inc.," which is the sole owner and manufacturer of what Koch calls his "antitoxin." It seems that, while stockholders and members pay $110 for the treatment, patients are charged $300 for the first treatment and $200 for any afterward. The difference between the price charged the Koch disciples and the price the disciples charge the victim is presumably to cover the risk assumed by the followers of Koch in injecting his secret mixture into the cancer patient.

Facts with regard to Koch's "Cancer Antitoxin" have been discussed in the *Journal of the American Medical Association* at different times and the matter, which has been arranged in reprint form, is available to any one who will send the publishers a self addressed, stamped envelope for it.

The Norfolk Meeting.

Summer has come and almost by the time that leaves us, the Norfolk meeting of the Medical Society of Virginia will be upon us. Dr. R. Lloyd Williams, chairman of the Local Committee in charge of Arrangements for our meeting, is lining up his workers and is already beginning to "count noses." Whenever that is done, it means a good time is being planned, so save part of your vacation for Norfolk, October 12, 13, 14 and 15.

Dr. W. L. Harris, of Norfolk, president of the Society, has been fortunate in securing three guests who will add greatly to the interest of the sessions. They are Dr. Walter Wells, who will perhaps speak on the first evening on "The Last Illness and Dealth of Washington"; Dr. F. C. Mann, of the Mayo Clinic, Rochester, Minn., who will have a prominent part in the symposium on "The Liver"; and Dr. Roger H. Dennett, of New York City, who will present a paper on a pediatric subject.

There is talk of an oyster roast for the men and something equally as attractive for the ladies, so prepare for the usual good time in Norfolk.

Appointments on Medical Examining Board of Virginia.

Governor Byrd has recently made the following appointments to the Virginia State

Board of Medical Examiners, for a period of four years: Dr. J. H. Ayres, Accomac; Dr. P. St. L. Moncure, Norfolk; Dr. H. U. Stephenson, Richmond; Dr. Fletcher J. Wright, Petersburg; Dr. I. C. Harrison, Danville; Dr. J. W. Preston, Roanoke; Dr. P. W. Boyd, Winchester; Dr. Lewis Holladay, Orange; Dr. F. H. Smith, Abingdon; Dr. Robert Glasgow, Lexington. Dr. G. W. Johnson, Danville, and Dr. E. H. Shackleford, Richmond, were reappointed the homeopathic and osteopathic members of the board, respectively.

The Walter Reed Medical Society

Held an interesting two days' session at Monument Lodge, Yorktown, Va., May 20th and 21st, with an unusually large attendance. The president, Dr. R. R. Hoskins, of Mathews, presided. Several interesting papers were presented by members and invited guests, all of which were discussed. On the first day, a boat ride was enjoyed by those in attendance. On the second day, the meeting opened with the reading of a paper and a demonstration of patients at Fort Eustis, after which members adjourned to Yorktown to complete the program.

The election of officers for the coming year resulted as follows: President, Dr. J. W. C. Jones, Newport News; vice-presidents, Drs. J. M. Henderson, Williamsburg; E. M. Easley, Bacons Castle; S. G. Cook, Yorktown; J. W. Smith, Hayes Store; and W. R. Gwathmey, Rnark; secretary, Dr. L. E. Stubbs, Newport News; and treasurer, Dr. J. E. Marable, Newport News, both of the latter being re-elected. Dr. H. D. Howe, Hampton, was elected delegate to the Norfolk meeting of the State Society, with Dr. L. E. Stubbs, of Newport News, as alternate.

It was decided to have Yorktown as a permanent place of meeting, owing to the fact that is about the geographical center of the section included in this Society. The next meeting will be held in the Spring of 1927.

The Medical Association of the Valley of Virginia

Met in Harrisonburg, Va., May 27th, with an attendance of about seventy-five. Six new members were received at this meeting. Dr. P. W. Boyd, Winchester, the president, presided, and Dr. A. F. Robertson, Jr., Staunton, acted as secretary. Interesting papers were read by members and by invited guest, Dr. Hugh H. Young of Baltimore, who, by the way, was a native of Rockingham County, Virginia. Dr. Robertson, upon request of the members, agreed to act as secretary until the annual meeting, as Dr. M. P. Jones, Churchville, duly elected secretary, was unable to serve and has since died. The next meeting is to be held in Staunton, on September 23rd.

Dr. and Mrs. J. C. Coulter

And daughter, Charlottesville, Va., returned the middle of May, from Pittsburgh, Pa., where Dr. Coulter was called on account of the illness and death of his father. His mother returned with him and will make her home with Dr. Coulter.

Mrs. Southgate Leigh,

Norfolk, Va., was elected chairman of the Committee in charge of Entertainment for the Women during the meeting of the American Medical Association in Washington, D. C., in the Spring of 1927.

The American Roentgen Ray Society

Held its annual sessions in Detroit, Mich., May 17-21, inclusive, with headquarters at the Book-Cadillac Hotel. A most excellent program had been arranged by the president, Dr. Russell D. Carman, of Rochester, Minn., who, to the regret of all, was unable to attend. In his absence, the first vice-president, Dr. P. F. Butler, of Boston, presided.

On the 19th, the members were taken by busses to Anne Arbor, where an all day session was held at the University of Michigan. An excellent program was arranged for that day by Dr. Preston M. Hickey, professor of Roentgenology at the University of Michigan.

Officers elected for the ensuing year are: President-elect, Dr. Alexander Howard Pirie, Montreal, Canada; vice-presidents, Drs. P. F. Butler, Boston, Mass., and E. L. Jenkinson, Chicago; secretary, Dr. Charles L. Martin, Dallas, Texas; treasurer, Dr. W. A. Evans, Detroit, Mich.; new member of the executive council, Dr. George W. Grier, Pittsburgh, Pa. Both Louisville, Ky., and Montreal, Canada, were suggested as the next place of meeting, so it was left to the executive council to name the place.

Tennessee State Medical Association.

At the annual meeting of this Association in Memphis, in May, Dr. Ernest R. Zemp, Knoxville, was elected president, and Dr. Joseph F. H. Gallagher, Nashville, secretary-editor.

Dr. and Mrs. W. P. Burton,

Boissevain, Va., are receiving congratulations upon the birth of a daughter on May 23.

The American Surgical Association

Held one of the best meetings in its history in Detroit, Mich., in May, and selected Richmond, Va., for its 1927 meeting. Dr. Harvey Cushing, Boston, was elected president; Dr. Robert B. Greenough, Boston, secretary; and Dr. John H. Jopson, Philadelphia, recorder.

The membership of this association is limited to one hundred and twenty-five, four of these being Virginians—Drs. J. S. Horsley, Stuart McGuire, Hugh H. Trout and Stephen H. Watts. This year, Drs. Horsley and Watts attended, and Dr. Horsley presented a paper on "The Causes of Cicatricial Contraction."

Are You Reporting Births in Your Practice?

In 1921, there were reported 70,041 births in Virginia. In 1925, there were only 61,200, or 8,841 less than four years before—this, in spite of the fact that the population has increased by many thousands during that time. The loss is chiefly among the well-to-do white population. Is this due to the fact that the women who are best able to raise good families of children are shirking their responsibilities or is it due to failure on the part of physicians to report births? To overcome the last named possibility, the Bureau of Vital Statistics is urging its registrars to require a more accurate compliance with the law to require physicians to report births within ten days, or to turn the case over to the Commonwealth's Attorney, as the law requires. Many physicians have already been fined. If you have delayed any reports, make them now.

The Hospital Association of North Carolina

Is holding its ninth annual conference and an exposition of hospital supplies and equipment at the Oceanic Hotel, Wrightsville Beach, June 10-12, just prior to the meeting of the State Society. Several hospital executives of national repute are on the program.

The Virginia Academy of Science

Held its fourth annual meeting with the University of Virginia as host. The meeting extended over two days, May 7th and 8th.

Prof. R. E. Loving, of the University of Richmond, presided and gave a most interesting presidential address on locomotive power. There were four sections: Astronomy, Mathematics and Physics; Biology; Psychology and Education; and Chemistry. All of them had interesting papers. Professor Humphreys, from the American Association for the Advancement of Science, was present and discussed several papers. A report from the Committee on Research was adopted, which includes recommendations of the Committee to appoint a permanent committee on research, and to award each year a medal or certificate for the best paper read before the annual meeting of the Virginia Academy of Science.

Out of a total membership of a little over 300, there were 175 present. It was the best session of the Virginia Academy of Science, and the program was excellently arranged and carried out. This body should be a great source of encouragement to all scientific work in Virginia, and the medical profession should be particularly interested in it. In the Section on Biology several medical papers were read, one of them on the Prevention of Pneumonia by Dr. Harry T. Marshall, of the University of Virginia, another on X-Ray Studies of the Sella Turcica by Dr. L. T. Royster, of the University of Virginia, and another on The Effects of Tissue during Hyperthyroidism by Professor Speidel.

Officers elected for the ensuing year were Dr. J. Shelton Horsley, president, and Dr. E. C. L. Miller, secretary, both of Richmond. Dr. Miller has been secretary for several years.

The next meeting will be in May, 1927, at Blacksburg, under the auspices of the Virginia Polytechnic Institute.

The Medical Society of the State of North Carolina

Is to hold its annual meeting at Wrightsville Beach, June 15, 16 and 17, under the presidency of Dr. Wm. deB. MacNider, of Chapel Hill. Dr. L. B. McBrayer, of Southern Pines, is secretary.

Dr. and Mrs. P. D. Pence,

Of St. Charles, Va., stopped for a visit to relatives in Edinburg, Va., en route to a medical meeting in Washington, D. C., in May.

The Medical and Chirurgical Faculty of Maryland,

At its annual meeting, the last of April, elected Dr. Thomas S. Cullen, president: Dr. John L. Riley, Snow Hill, first vice-president: and Dr. Joseph A. Chatard, Baltimore, secretary.

Medical Director of Hilltop Sanitarium.

The medical staff of Hilltop Sanitarium, Danville, Va., recently decided that a concentration of authority would be wise, and the entire staff decided to change the form of administration so as to have a medical director with an advisory board of six. Dr. S. E. Huges, of Danville, was elected medical director.

The Association of American Physicians,

At its annual meeting in Atlantic City, May 4 and 5, elected Dr. Charles F. Hoover, of Cleveland, Ohio, president for the ensuing year. Dr. Francis W. Peabody, of Boston, is secretary.

Dr. Wilbur Bowman,

Petersburg, Va., was elected a delegate from the Petersburg Aerie No. 82, Order of Eagles, to the Eagles' convention in Richmond, early in June.

President Medical Veterans of World War.

Dr. Hubert Work, former president of the American Medical Association, was re-elected president of the Medical Veterans of the World War, at the annual dinner in Dallas, Texas, during the time of the A. M. A. meeting.

Medical Exhibit at Philadelphia Exposition.

The board of directors of the Sesqui-centennial Exposition in Philadelphia has appropriated $250,000 for a medical exhibit. This will include all phases of the scientific treatment of the sick and will occupy a floor space of 15,000 square feet. Prominent physicians will be in charge of the various sections.

Dr. S. R. Jordan,

Formerly of Townsville, N. C., has located in Smithfield, Va., and taken over the practice of Dr. T. H. Massey who recently moved to Suffolk, Va.

The American Gastro-Enterological Association,

At its annual meeting at Atlantic City, in May, elected Dr. Franklin W. White, Boston, president, and Dr. John Bryant, also of Boston, secretary. It was decided also to hold the 1927 meeting in Atlantic City.

Dr. Kitchin Resigns as Dean.

Dr. Thurman Kitchin, dean of Wake Forest College, School of Medicine, Wake Forest, N. C., and professor of physiology and pharmacology, has tendered his resignation, effective at the end of this session, that he may resume private practice at his former home, Scotland Neck, N. C.

Petersburg Nurses Graduate.

At the graduating exercises of the Petersburg Hospital Training School for Nurses, May 27, seven nurses received their diplomas. Presentation of hospital pins was made by Dr. C. S. Dodd, while Dr. George H. Reese awarded diplomas and administered the Florence Nightingale pledge.

Dr. R. H. Garthright,

Of Vinton, Va., visited relatives in Yorktown, Va., early in June.

The High Cost of Children.

It costs about $6,150 to bring up one child from, and including birth, to the age of eighteen, according to the Metropolitan Life Insurance Company, which is making a series of studies on "the value of man" based on the approximate expenditures in dollars and cents for a growing child during the non-productive period of life.

This total is reached by adding to the initial "cost of being born," estimated at $250, the sums of $2,500 for food; $1,620 for rent, reckoning the share of the child as one-sixth of the total so expended; $300 for fuel and light, $351 for furniture and household maintenance; $144 for first cost of installation of the home, and for clothing, $912 for a boy and $1,002 for a girl.

Children's Clinic, University of Virginia.

Nearly 1,000 children already are on the lists of the general child welfare clinic recently organized in connection with the pediatric department of the University of Virginia Hospital to serve the needs of the people of the mountainous section of Western Virginia and to provide a laboratory for the teaching of pediatrics to nurses and medical students. The department of psychology of the University will superintend the giving of mental tests and the department of anatomy and anthropology will study the national and racial characteristics of the patients of the clinic. The expenses of the first three years have been provided by private subscriptions and by a grant from the Commonwealth Fund.

Dr. Thomas E. Hughes,

Of Richmond, moved his offices the first of May to McGuire Clinic, this city, where he

has charge of the department of Oto-Laryngology.

Dr. S. D. McPherson,

Durham, N. C., has recently opened a private hospital in that place, known as McPherson Hospital, for the treatment of diseases of the eye, ear, nose and throat.

Dr. and Mrs. Moses Tredway,

Of Emporia, Va., have returned from New York, where Dr. Tredway has been for some time attending clinics at the New York Post-Graduate Hospital.

Dr. H. M. Rowan,

Formerly of Raphine, Va., returned from a stay in Europe, about six weeks ago, and has located at 250 West Tulpehocken Street, Germantown, Philadelphia, Pa.

Dr. and Mrs. D. Hunter Marrow,

After spending the winter at Daytona, Fla., have returned to their home at Union Level, Va.

Dr. J. Lewis Blanton,

Of the class of '24, Medical College of Virginia, has located at Fieldale, Va.

Dr. and Mrs. R. E. Chumbley

Returned to their home in Radford, Va., the latter part of May, after a visit to Richmond, where they were called on account of the illness of their daughter, who was in a local hospital.

The Graduate Nurses' Association of Virginia,

At its annual meeting in Roanoke, last month, elected Miss Martha Baylor, of Roanoke, president; Miss Lillie Walker, Roanoke, secretary; Miss Florence Bishop, Portsmouth, treasurer; Miss Agnes Randolph, Richmond, a member of the board of directors. The vice-presidents are Miss Nannie J. Minor and Miss Elizabeth Rutz, of Richmond, and Miss Carrie May Copenhaver, of Bristol.

At this meeting, it was found that $30,000 of the $50,000 which was to be raised to found a chair of nursing at the University of Virginia, was already in hand, and that $15,000 in pledges would become due not later than July 1, 1926. Those in attendance pledged the additional $5,000 and plans are on foot to present the whole amount to the University of Virginia at an early date for the establishment of a chair of nursing.

Dr. and Mrs. R. H. Dunn,

South Charleston, W. Va., were recent visitors in Staunton, Va., having come there for the birthday anniversary of Dr. Dunn's mother. Dr. Dunn is an alumnus of the Medical College of Virginia of class of '10.

Dr. Robley R. Goad,

Of the class of '25, Medical College of Virginia, was a recent visitor in Richmond, en route to his home in Richlands, Va., after a visit to Boston, Mass., and in Maine.

Dr. T. W. Hankins,

Fordwick, Va., has been elected president of the Bank of Craigsville, Va., which has just re-opened after having been in the hands of a receiver.

The Hughes Memorial Hospital,

Recently completed at a cost of $400,000, was opened in Danville, Va., on June 10th. It was named in memory of the late John E. Hughes, of Danville, who left $250,000 in his will for the hospital. The building has four stories and is modern in every way. Upon opening of the new hospital, patients were transferred from the former General Hospital, which was then closed.

Dr. Guy Hinsdale,

Of Hot Springs, Va., has gone to his summer residence, Kennebunkport, Maine, where he will remain until September 15th. Dr. Hinsdale is American Representative in the International Society of Medical Hydrology for 1926.

Dr. P. A. Irving,

Farmville, Va., was recently knocked down by an automobile, but we are glad to announce that he suffered only minor injuries.

Dr. J. B. Harvie Waring,

Blanchester, Ohio, read a paper entitled "Modern Tonsillectomy Methods" at the meeting of the Ohio State Medical Association in Toledo, in May.

Dr. P. W. Miles,

Danville, Va., is taking a special course in pediatrics at Harvard Medical School, Boston. Upon his return home, in the late summer, he will limit his work to this specialty.

Married.

Dr. Harry Goldstein, Erie, Pa., of the class of '26, Medical College of Virginia, and Miss Dorothy Cohen, Richmond, June 2.

Dr. Charles W. Richardson,

Washington, D. C., who has just completed a term of service as a trustee of the American Medical Association, at the Dallas meeting was re-elected for another term of five years.

Dr. and Mrs. J. S. Horsley, Jr.,

Richmond, left early this month for Baltimore, where Dr. Horsley plans to spend a while observing the plastic work of Dr. John Staige Davis, one of the two men in the United States who does plastic surgery alone.

Dr. John Lee Grant,

For sometime at Midland, Va., has just returned to Virginia after an absence of about a year, and has located in Winchester, Va.

Dr. Israel Brown Praises Comrade.

There was recently unveiled at Arlington National Cemetery a bronze tablet bearing the names of eleven army chaplains killed in action or who died of wounds and of twelve others who died during the World War. One who died of wounds was Reverend Thomas M. Bulla, of Emporia and Norfolk.

Dr. Israel Brown, of Norfolk, has recently prepared a most interesting sketch of Mr. Bulla, from the time he first met him when he entered the service in August, 1917, to the time of his death. The Norfolk papers published the splendid tribute to this young man, who was beloved alike by officers and men on the French battle front.

Dr. and Mrs. E. Latane Flanagan,

Richmond, motored to Louisa, Va., the latter part of May, for a short visit to relatives.

Dr. W. B. Fuqua

Has returned to his home in Radford, Va., after a motor trip through Eastern Virginia.

A World Conference on Narcotic Education

Will be held in Philadelphia, July 5-10, with headquarters at the Bellevue-Stratford Hotel. Information with regard to this conference may be obtained from Advance Headquarters, Room 192-A House Office Bldg., Washington, D. C.

Antituberculosis Campaign in Massachusetts.

Reporting progress in the ten-year program for the control of tuberculosis in children begun in 1924, the Massachusetts Department of Public Health states that 10,000 white children between five and fifteen were examined during the first year at clinics held in forty-three cities and towns. Approximately 29 per cent of the children reacted to the tuberculin test, 28 per cent gave a history of exposure to human tuberculosis, 25 per cent of these being cases of immediate contact with the disease, and 15 per cent of the rural children gave a history of contact but did not react to the test. Among other defects discovered and treated were enlarged and diseased tonsils and adenoids in 31 per cent of the country and 26 per cent of the city children; poor posture in about 60 per cent of all the children, and valvular heart disease in 1.7 of both groups. Reexamination of some of these children during the present year indicates that through the co-operation of the local communities, physical defects are being corrected and underweight is already being lessened.

The U. S. Civil Service Commission,

Washington, D. C., announces open competitive examinations for Junior Medical Officer (Interne), applications to be rated as received until August 31; and for Dietitian, applications to be rated as received until December 30.

Full information and application blanks may be obtained from the Commission or from the secretary of the Board of U. S. Civil Service Examiners at the post-office or custom house in any city.

Dr. and Mrs. M. L. Anderson,

Richmond, motored to Lynchburg, early this month, to attend the graduation exercises at Randolph-Macon Woman's College, their daughter, Miss Anne Anderson, being a senior there this year.

Dr. Fred M. Hodges,

Richmond, was made secretary of the Section on Radiology of the American Medical Association, at the meeting in Dallas, Texas, recently.

The American Association of Genito-Urinary Surgeons,

At its annual meeting in May, elected Dr. James A. Gardner, Buffalo, N. Y., president, and Dr. William C. Quinby, Boston, secretary. It was decided to hold the next annual session at Atlantic City, N. J.

Dr. Stuart McGuire,

Richmond, Va., was one of the speakers at the meeting of the Sixth District Medical Society of North Carolina, at its meeting held at Wake Forest, May 11.

Dr. H. L. Burwell

Has returned to his home at Chase City, Va., after a visit to Roanoke, Va.

Dr. Brodnax Honored.

Students of the Medical College of Virginia, Richmond, honored Dr. John W. Brodnax, of this city, for many years a professor at the College, by dedicating this year's issue of "*The X-Ray*" to him, in behalf of his long and faithful services to the college. Dr. Brodnax has long been held in high esteem by the faculty and students of the College.

Independence Day

Is near at hand and now is the time to impress upon grown-ups and children alike the need of care in the use of fireworks in celebration of the Fourth of July. Last year's celebration resulted in 111 killed and 1,030 known injured—mostly children—as the result of the Fourth of July celebration. Many of these casualties were caused by the so-called harmless sparklers, other fireworks, bonfires, cap pistols, blank cartridges, etc. A marked reduction in the list of casualties is noted in some of the larger cities where restrictive legislation has been properly enforced.

Had a record been kept of all casualties resulting from the use of fireworks since 1776, it would undoubtedly be found that more persons have been killed and injured during celebrations commemorating our Independence Day than were killed and injured during the Revolutionary War.

New Publication by U. S. Public Health Service.

The United States Public Health Service, Washington, D. C., announces the issuance of a publication known as the "Venereal Disease Manual for Social and Corrective Agencies." This is especially designed for: Courts and Probation Officers, Social Workers, Nurses, Visiting Teachers, Jailers and Wardens, Policemen and Policewomen, Superintendents and Matrons of Homes for the Dependent, Delinquent and Defective Classes.

University of Virginia Hospital Report.

The Biennial Report of the University of Virginia Hospital, at Charlottesville, for the two years from July 1, 1923 to July 1, 1925, shows that for the first year there were 4,683 patients admitted to the Hospital and in the second year, 5,406. The daily average cost per In-patient was $3.50 the first year and $4.08 the second year. During this period the McIntire Building was opened. The top floor of this building is used for the residence of the internes, the lower floors being used for the Children's Department and the Obstetrical Department.

This is one of the two State-supported hospitals and, in the period covered by this report, patients were received from ninety-five of the one hundred counties of the State, in addition to a number from other states.

Dr. I. Keith Briggs

And some friends, of South Boston, Va., left early this month for a visit to Florida.

Dr. Loring Hammer

Has returned to his home at Luray, after a short stay in Richmond.

On Fishing Trip.

Drs. A. W. Terrell and R. M. Taliaferro, Lynchburg, Va., have gone to the Eastern Shore of Virginia, on a fishing trip.

Dr. and Mrs. E. H. Claud

Have returned to their home in Portsmouth, after a visit in Boydton, Va.

Dr. H. R. Farley,

Pulaski, Va., has been on a visit to his former home in Giles County, Va.

Dr. Clifton W. Henson,

Richmond, of the class of '26, Medical College of Virginia, is spending the month of June, assisting Dr. Walter D. Simmons, at Slab Fork, W. Va.

Wanted—

A graduate in medicine, with general hospital training, to serve as interne in Eye, Ear and Throat Hospital. Salary and maintenance. Apply to Dr. E. G. Gill, Roanoke, Va. (Adv.)

For Sale.

Electric Diagnostic Outfit, McIntosh Electric Head Light, E. S. I. Cautery Transformer, Air Compressor Apparatus, McCaskey

Physicians' and Surgeons' Register (has never been used and all cards are in it), Walker and DePuy Splints, and all kinds of surgical instruments. Address Mrs. W. W. Chaffin, Pulaski, Va.—(Adv.)

Obituary

Dr. William Edward Anderson,

Of Farmville, Va., a former vice-president of the Medical Society of Virginia, died May 10, having been in bad health for some time. Dr. Anderson was born in Prince George County, Va., in September, 1866, and received his early education at Randolph-Macon College. He graduated from the Medical College of Virginia in 1888 and joined the Medical Society of Virginia that year. He was an active member of this Society, having represented it in the House of Delegates of the American Medical Association for several terms. He practiced his profession in Farmville for twenty-five years and was for some time a surgeon of the Norfolk and Western Railway. His wife and several children survive him.

Dr. Robert Scott Spilman,

For some time a practicing physician in Norfolk, Va., but for the past few years Post Physician at Virginia Military Institute, Lexington, Va., died at his home in that place, May 22, aged 58 years. The burial was at Warrenton, Va., his native home. Dr. Spilman graduated from Virginia Military Institute in 1893 and from University and Bellevue Hospital Medical College, New York, in 1899. He joined the Medical Society of Virginia that year. Dr. Spilman saw service in the Spanish-American War and was also overseas in the World War. During his last service abroad, he was gassed and never had good, vigorous health afterward. He was unmarried but is survived by his sisters at Warrenton, Va.

Dr. Marshall Price Jones,

Of Churchville, Va., for thirty years a practicing physician of Augusta County, died in Staunton, Va., May 21, after a brief illness. Dr. Jones was born in Highland County, Va., sixty-two years ago, and studied medicine at the College of Physicians and Surgeons, Baltimore, from which he graduated in 1892. He had been a member of the Medical Society of Virginia since 1906. He is survived by his wife and a large family connection.

Dr. John E. Coles,

Of Alberene, Va., died suddenly, in California, about the middle of May. The interment was made near his home in Albemarle County, Va. Dr. Coles was a native of Albemarle County, and 65 years of age. He obtained his early education at local schools and received his diploma in medicine from the University of Virginia in 1882. Following this, he practiced his profession in Albemarle County until 1920, when he retired, since which time he had spent much time in travelling. He had been a member of the Medical Society of Virginia since 1883.

Dr. Benjamin W. Cohn,

Of Norfolk, Va., died in that city, November 4, 1925. He was 61 years of age and had graduated from the Medical College of Virginia, Richmond, in 1884. He was a member of the Medical Society of Virginia.

Dr. John Whitehead,

Prominent North Carolina physician, died suddenly at his home, Salisbury, N. C., April 15, death being due to heart disease. He was seventy years of age and was graduated in medicine from the University of Pennsylvania School of Medicine, Philadelphia, in 1880.

Dr. William Wade Morris,

For many years a physician and prominent figure in Henry County, Virginia, died at his home at Preston, May 13, aged 94 years. He was graduated in medicine from Jefferson Medical College, Philadelphia, in 1860, and saw active service with the Confederacy in the War between the States. Several children survive him.

Dr. Joseph H. Lawrence,

Pendleton, S. C., of the class of '90, Medical College of Virginia, was killed by the accidental discharge of his shot gun, when starting on a fishing and hunting trip, May 17. Dr. Pendleton was a native of Southampton County, Va., and was visiting a sister there at the time of his death.

Dr. Joseph H. Delaney,

Of the class of '97, University of Virginia, Department of Medicine, and for sometime of Bozeman, Montana, died at San Antonio, Texas, March 11, aged fifty-one years. Death was due to tuberculous meningitis.

PARKE, DAVIS AND COMPANY

RABIES VACCINE

(Cumming)

THE importance of preventing rabies is fully appreciated by the medical profession for the reason that not a single cure of a well authenticated case of human rabies has ever been reported.

The prompt employment of Rabies Vaccine is imperative for the safety of the patient. Rabies Vaccine (Cumming), P. D. & Co., is a product that represents the antigenic principle of rabies virus, but since it contains no living virus it can be administered without risk of precipitating an attack of rabies. The doses are not numbered, for they are all alike; 2 cc. of a harmless vaccine by hypodermic injection; no more exacting technique than that.

Rabies Vaccine (Cumming), P. D. & Co., is made by the method devised by Dr. J. G. Cumming. A one per cent suspension of rabic brain tissue (from rabbits dying of rabies induced by an injection of fixed virus) is dialyzed against running distilled sterile water until the infectivity of the virus is destroyed. The safety of the finished product is assured by injections beneath the dura of rabbits and subcutaneously in guinea-pigs and mice. Sterility tests are also utilized to insure freedom from bacteria. The vaccine is standardized by weight so that 2 cc. of suspension, the contents of one of the syringe containers, contains sufficient material for one injection for an adult.

The safety and efficiency of Rabies Vaccine (Cumming), P. D. & Co., has been amply demonstrated by its employment in at least ten thousand cases of bites from rabid animals. The usual treatment consists of twenty-one injections—one injection daily for three weeks. A shorter course — one of fourteen injections only—suffices when the wound is only a slight scratch on the hands or lower limbs.

Rabies Vaccine (Cumming), P. D. & Co., is supplied in packages of seven 2-cc syringe containers, complete, with needles, each syringe holding one dose. Orders for a 21- or a 14-dose treatment should be sent direct to Detroit (the home office) or the nearest branch or depot.

PARKE, DAVIS & COMPANY

(U. S. License No. 1 for the Manufacture of Biological Products)

DETROIT, MICHIGAN

RABIES VACCINE (CUMMING), P. D. & CO., IS INCLUDED IN N. N. R. BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION

Capital $1,000,000 Surplus Earned $1,500,000

ESTABLISHED 1892

To act as Executor, Guardian and Trustee

$30,000,000

of investments held in Trust

Confidential Interviews Invited.

THE JEFFERSON

The Jefferson

RICHMOND, VA.

EUROPEAN PLAN.

Ideally situated in the most desirable section of Richmond and within five minutes walk of the business center and shopping district.

400 ROOMS—300 BATHS.

Every comfort for the tourist. Every convenience for the traveling man. Rooms single and en suite. Turkish and Roman Baths. Spacious sample rooms.

O. F. WEISIGER, Manager.

Hotel Richmond

300 Rooms, Fireproof,
Overlooking Capitol Park

In Center of Business and Amusements

HOTEL RICHMOND REALTY CORP.
Owners

W. E. Hockett, Manager

THIS SPACE RESERVED FOR

MURPHY'S HOTEL

8TH AND BROAD STREETS
RICHMOND, VA.

The Largest and Most Distinctive Hotel in Virginia

RATES REASONABLE
SERVICE UNEXCELLED

JAS. T. DISNEY President and Manager

Virginia Medical Monthly

OFFICIAL ORGAN OF THE MEDICAL SOCIETY OF VIRGINIA

Vol. 53, No. 4.
WHOLE No. 889.

RICHMOND, VA., JULY, 1926

$2.00 A YEAR
20 CENTS A COPY

CONTENTS.

ORIGINAL COMMUNICATIONS:

The Clinical Importance of Secondary Features of the Blood Count in Disease. O. H. Perry Pepper, M. D., Philadelphia, Penn. 207

Massive Collapse of the Lung.—Report of Four Cases. Hugh H. Trout, M. D., and Harry M. Hayter, M. D., Roanoke, Va. 214

Hernias. E. M. Townsend, Surgeon (R), U. S. P. H. S., Norfolk, Va. 221

Fall Hay-Fever in the District of Columbia and Vicinity. Grafton Tyler Brown, B. S., M. D., Washington, D. C. 229

Intravenous Mercurochrome 220. Wilbur M. Bowman, M. D., Petersburg, Va. 231

Determination of Phorias by Prolonged Monocular Occlusion. Charles A. Young, M. D., Roanoke, Va. 233

Miliary Tuberculosis of the Choroid. James N. Greear, Jr., M. D., Washington, D. C. 235

Report of Two Cases of Epidemic Encephalitis. H. T. Hawkins, M. D., Clover, Va. 238

The Intracapsular Method of Cataract Extraction—With Report of Cases. William Patterson, M. D., Richmond, Va. 239

Prostatectomy With Reference to Pre-Operative Treatment. B. E. Harrell, M. D., Norfolk, Va. 241

The Prevention of Acute Lobar Pneumococcus Pneumonia. I. K. Redd, M. D., Atlee, Va. 243

Ethylene—The New General Anesthetic. C. N. Chipman, M. D., Washington, D. C. 245

Further Study of Antimony in Vincent's Infections. T. Latane Driscoll, M. D., Richmond, Va. 248

Syphilis of the Stomach: Report of a Case. L. Minor Blackford, M. D., Rochester, Minn. 249

The Diagnostics of the Acute Abdomen. Beverley F. Eckles, M. D., F. A. C. S., Richmond, Va. 250

Memorial Meeting of the Norfolk County Medical Society, to Honor the Memory of Dr. Henry R. Carter, Late Assistant Surgeon-General, U. S. P. H. S. B. M. Baker, M. D., Norfolk, Va. 253

PROCEEDINGS OF SOCIETIES 259

CORRESPONDENCE 260

WOMAN'S AUXILIARY 265

THE TRUTH ABOUT MEDICINE 265

BOOK ANNOUNCEMENTS 267

EDITORIAL 268

NEWS NOTES 270

OBITUARY 277

INDEX OF ADVERTISERS—Advertising Page 5.

THE N. Y. ACADEMY OF MEDICINE
JUL 15 1926
LIBRARY

CALCREOSE

IN

ENTERITIS

"CREOSOTE and guaiacol are used internally as intestinal and urinary antiseptics, as stimulant expectorants in bronchitis and in the treatment of tuberculosis. Their local irritant actions often interfere with their internal administration."—N. N. R., 1925, p. 99.

DURING the summer months intestinal antisepsis is particularly desired in connection with the treatment of various diseases of the intestinal tract.

CALCREOSE, being a loose chemical combination of equal parts of creosote and calcium oxide, is especially useful in this connection because it supplies all the benefits of creosote without the possible disturbances caused by creosote alone.

Calcreose can be given in large doses for long periods without apparent difficulty.

Powder: Tablets: Solution **Samples of Tablets on Request**

THE MALTBIE CHEMICAL COMPANY

Newark, New Jersey

DEXTRI-MALTOSE
for Infants

It is generally accepted by pediatricians that the ordinary sugars used in infant food mixtures are often the cause of digestive disturbances.

YET—the importance of carbohydrate additions to milk mixtures is recognized.

MEAD'S DEXTRI-MALTOSE

is a preparation of equal parts of dextrins and maltose. It has the following advantages over other forms of sugar in supplying the carbohydrate deficiency of diluted cow's milk:

It can be assimilated by the infant in greater amounts than other sugars

It requires the least amount of energy on the part of the infant to assimilate it

It is the form of carbohydrate least likely to cause diarrhea

It produces a quicker gain in weight than any other form of carbohydrate

Pediatricians in various parts of the world have agreed with the above statements, and have prescribed DEXTRI-MALTOSE with cow's milk for the artificial feeding of infants.

The Mead Policy

Mead's Infant Diet Materials are advertised only to physicians. No feeding directions accompany trade packages. Information in regard to feeding is supplied to the mother by written instructions from her doctor, who changes the feedings from time to time to meet the nutritional requirements of the growing infant. Literature furnished only to physicians.

MEAD JOHNSON & COMPANY, Evansville, Indiana, U. S. A.

Manufacturers of Infant Diet Materials Exclusively

Virginia Medical Monthly

Official Organ of the Medical Society of Virginia

Vol. 53, No. 4.
WHOLE No. 889.

RICHMOND, VA., JULY, 1926

20 CENTS A COPY
$2.00 A YEAR

Original Communications

THE CLINICAL IMPORTANCE OF SECONDARY FEATURES OF THE BLOOD COUNT IN DISEASE.*

By O. H. PERRY PEPPER, M. D., Philadelphia, Penn.
Assistant Professor of Medicine, University of Pennsylvania.

It is is my desire in this address to review the topic of the blood count in disease. This may sound hackneyed and time worn to you but I hope to make it interesting and instructive. We need occasionally to review even such a familiar subject as this in order to recall minor facts which we may have forgotten and perhaps to gain a fresh viewpoint of the subject as a whole. This latter I may be able to supply through the emphasis which I plan to give to the nature of the secondary features of the various blood pictures encountered in disease and their explanation on the basis of the common origin of various types of blood cell within the bone marrow. To accomplish my end it seems necessary for me to start with the normal blood and I must beg your indulgence if in thus laying the foundation for my further remarks I seem too elementary.

The blood count in the normal individual is maintained within its physiologic limits by the perfect balance between blood cell formation and blood cell destruction. Each type of cell in the blood is daily being destroyed and daily being reproduced in enormous numbers but the number of each type of cell per unit of blood is kept amazingly constant. This is the more remarkable when it is remembered that there are not only three main types of formed elements in the blood—the red cells, the white cells and the platelets,—but three subtypes of white blood cells—the granular leucocytes, the lymphocytes and the group which is now coming to be called the monocytes. Perhaps at the risk of seeming too elementary the following table may be referred to:

TABLE 1.

Normal Blood Count per Cubic Millimeter.

Red blood cells		5,000,000
Platelets		300,000
White blood cells		8,000
Granular leucocytes		
Neutrophilic	70 %	
Eosinophilic	2 %	
Basophilic	0.5%	
Lymphocytes	20 %	
Monocytes	7.5%	

The red blood cells with their contained hemoglobin are concerned with the carriage of oxygen and indirectly with the transport of carbon dioxid. They act as one of the defenses of the body against a change in the reaction of the blood such as is threatened in "acidosis."

The platelets are recognized as one of the important factors in blood coagulation although this process is still not so clearly understood.

The white blood cells form another type of body defense, different forms of white blood cells acting in different ways. For instance, the neutrophilic leucocytes are active against many bacterial infections. The eosinophilic leucocyte seems to be concerned with foreign proteins, the lymphocytes play some role in our defense against tuberculosis and perhaps against certain tumors, and, finally, the monocytes under which term are included what used to be called the large mononuclear and the transitional, are the active scavengers of the blood in so far as coarser materials such as particulate matter, malarial pigment granules, foreign cells, carbon particles, et cetera.

All these varieties of cells occur in normal blood and in almost fixed constant numbers. We must, of course, remember these individual cell types since in disease certain individual variations occur which are of diagnostic significance. But we must also keep in mind certain groupings of these cells according to the tissues or the site from which they arise. This is shown in Table 2.

*Read by invitation before the Southwestern Virginia Medical Society, in Roanoke, March 30 and 31, 1926.

TABLE 2.
Origin of Blood Cells.

Red blood cells	Bone marrow.
Platelets	Bone marrow.
White blood cells	
Granular leucocytes	Bone marrow.
Lymphocytes	Lymphoid tissue.
Monocytes	Vascular endothelium.

It will be noted that in the bone marrow arise three different forms—the red cells, the platelets and the granular leucocytes. This fact is of the utmost importance in forming a clear understanding of the many and variable blood pictures in disease.

In the bone marrow the mother cells from which these three groups of cells arise are intermingled closely together, with little nests of maturing cells of one type or another adjoining one another. This intimate relationship is responsible for a tendency for these three types of cells arising in the marrow to be affected as a group. In other words, a stimulus or disturbance of production of one cell type tends to secondarily affect the other two types. We meet the results of this relationship over and over again in the blood pictures in disease. It is this group relationship which I want to emphasize for it explains so many of the confusing points in diagnostic hematology. It makes many matters clear and simple.

In the marrow there are always present immature forms of each of the blood cell types which arise from marrow tissue. Under normal conditions only cells of a certain degree of maturity enter the circulating blood and, although in normal blood there are younger and older cells of each cell type, there are never any of great immaturity. Only under abnormal conditions, such as disease, do the more immature forms enter the circulation. Table 3 attempts to illustrate this:

TABLE 3.

Immature	Young	Mature
R. B. C. Nucleated r. b. c.	Retriculated	Adult r. b. c.
Platelets Megakaryocyte	?	Adult platelet.
W. B. C. Myeloblast	Myelocyte	Granular leucocyte.
Lymphoblast		Lymphocyte.
? ?		Monocyte.

Forms to the left of the vertical line do not appear in the circulating blood of adults under normal conditions except an occasional myelocyte, but may appear under abnormal conditions. It is their occurrence in the blood which results in the many confusing pictures which cause so much diagnostic difficulty. It is only for the purpose of diagnosis and hence of therapy and prognosis that the practical physician is interested in study of hematology and we must keep this fact always in mind. It must be said, however, that a study of the blood count for these purposes well rewards him who pursues it.

Now having reminded you of the figures of the normal blood count and of the grouping of the various types of cell and their origin, and having also mentioned the immature forms of each, leet us turn to the analysis of the simplest of the changes from normal which commonly occur. But before we deal with this phase of the question, let me risk repetition by presenting two tables; detailing the effects on the blood count of marrow stimulation in one, and of marrow inactivity in the other.

TABLE 4.
Evidences of Marrow Activity.

Red blood cells.	1. High red cell count. 2. Increase in young red blood cells. 3. Presence of nucleated red blood cells.
Platelets.	1. High count.
White blood cells.	1. High total count. 2. High granular leucocyte, per cent. 3. Presence of myelocytes.

Marrow activity, as you see in Table 4, may be evidenced by an increased count of any or all of the three cell types arising in the marrow, and, furthermore, by the appearance in the circulating blood of younger cells, even to such a degree as to bring into the blood forms which normally do not appear there. It is probable that if we could recognize younger forms of platelets we would find that this was true of the platelets as well as of the red cells and white cells. In Table 5, on the other hand, the evidences of inactivity of the marrow are detailed:

TABLE 5.
Evidences of Marrow Failure.

Red blood cells.	1. Low red blood cell count. 2. Reduction in young red blood cells, per cent. 3. Absence of nucleated r. b. c.
Platelets.	1. Low count.
White blood cells.	1. Low total count. 2. Low granular leucocyte, per cent. 3. Relatively high lymphocyte, per cent.

Here a low count of red cells, platelets and white cells is present and there is a diminu-

tion or absence of the young and immature forms of the various series.

Now, when we come to consider the deviations from the normal of the blood, we will find our task much simplified if we consider these changes in terms of marrow activity, of cell groups and their secondary reactions. Let us commence with the simplest.

Leucocytosis.—Leucocytosis or an increase in the number of white cells in the circulating blood results in the majority of instances from an increase in the white cell types arising in the bone marrow and especially in an increase of the neutrophilic leucocytes. This is so constantly the case that unless the word leucocytosis is qualified we understand the leucocytosis to be due to neutrophilic leucocytes. Such a leucocytosis is of common occurrence in many infections, including pneumonia and the various so-called pyogenic infections. The increase in the circulating leucocytes results from a stimulation of production of these cells in the bone marrow. Now, if I have made my remarks clear so far, you will appreciate why with one type of cell production stimulated in the bone marrow we should expect two secondary phenomena; first, that in proportion to the stimulation of production there would appear in the circulating blood more immature forms of the cell type whose production is being stimulated, and secondly, that there would be some effect on the normal production of the other cell forms which arise from the marrow. Both of these phenomena occur in the blood counts in diseases with leucocytosis, but they only occur in the adult when the leucocytosis is extreme. In the infant or child, however, they occur with the greatest frequency and often lead to confusion.

TABLE 6.
Simple Leucocytosis.

	Adult	Child
Red blood cells	5,000,000	5,000,000
Nucleated red blood cells	0	+
Platelets	300,000	+
White blood cells	25,000	40,000
Neutrophilic leucocytes	85%	90%
Myelocytes	0	5%

In this table you will see that with an ordinary level of leucocytosis in the adult there are no nucleated red cells and no increase of platelets to evidence any stimulation of the other two cell types which arise in the marrow, nor are there any myelocytes in the blood. It is true that the neutrophilic leucocytes, which constitute such a large proportion of the 25,000 white cells, are many of them young but there is no overstepping of the normal limits of immaturity and no myelocytes, which are the predecessors of the leucocytes in the marrow, occur in the blood stream. On the other hand, in the child the response to, let us say, pneumonic infection, is much greater and more varied; not only does the leucocyte count go higher, as for example 40,000 instead of 25,000, but immature red cells still retaining their nuclei appear in the blood stream which they do not do normally. The platelet count may increase considerably and, as an evidence of the intensity of the leucocyte producing activity of the bone marrow, not only do large numbers of young neutrophilic leucocytes appear in the blood but also still more immature myelocytes appear in variable numbers. This blood picture seems very simple when explained in this way, I hope. But the discovery of myelocytes or of nucleated reds in the blood picture of a child with some uncertain infection very frequently causes confusion and raises the question of some very serious blood disease such as leucemia. This is especially apt to happen when leucocytosis is more extreme than in the example given. Children not so uncommonly produce very high white cell counts in response to infections which, in later years when the bloodforming organs have so to speak become more stable, give rise to relatively slight changes in the blood count.

TABLE 7.
Extreme Leucocytosis in Infancy.

	Pneumonia	Whooping Cough
White blood cells	90,000	141,000
Neutrophilic leucocytes	92%	30%
Myelocytes	3%	Few
Lymphocytes	5%	58%
Nucleated red blood cells	+	Few

Table 7 gives examples of two of these very remarkable leucocytoses of infancy. In the first column are the figures in a case of pneumonia in a child of three years of age, and your attention is again drawn to the occurrence of myelocytes. These cells, which do not occur in normal blood, are here present merely in response to the pneumonia and must not be suspected of indicating any blood disease. Their occurrence might almost be spoken of as physiological in such a case. In the second column is a very extreme example of a re-

sponse of a different nature. In whooping cough a leucocytosis due to an increase of lymphocytes is the rule, but usually the count does not go much above 40,000. A few instances of such extreme counts as are shown in the table have been reported by Crombie in Scotland and by Seitz in this country. You notice that with this enormous lymphocytosis only a few myelocytes appear. This is just what you should expect. Lymphocytes are being produced by lymphoid tissue in a variety of places, some probably actually in the bone marrow, but there is little stimulation of any of the so-called marrow series of cells. Therefore, few myelocytes are found and few nucleated red cells. On the other hand, an increasing immaturity of the lymphocytes will be observed.

As a leucocytosis declines with the subsidence of the causative infection, the blood count tends to return to normal. The changes in the other cell forms, which have been secondarily produced, promptly disappear and the immature forms of the white cells cease to appear in the blood beyond their occurrence in the normal. As might be expected, the neutrophilic leucocyte, following a neutrophilic leucocytosis, is the last group to regain its normal level, it having been the most markedly disturbed. As the numbers of the neutrophilic leucocytes approach normal there is, for a short time, an increase in the numbers of its brother cell type, the eosinophiles. This so-called post-infectious eosinophilia is not well understood. During the height of the leucocytosis the eosinophiles almost drop out of the picture and then increase after the infection is all over. In a recent case of pneumonia which had had some 24,000 leucocytes with a neutrophile percentage of 85 during the height of the disease, there was after the temperature had fallen to normal and the leucocyte count had dropped almost to normal, an eosinophilia of 13 per cent. This is unusually high. So much for the evidence of the principles I am trying to make clear as applied to leucocytosis. I think it must be agreed that at least in children all three of the cell types arising in the marrow are stimulated with the appearance in the blood of more immature forms than normal. Let us now consider these same principles as they apply in cases of anemia.

Anemia. In a secondary anemia the result, for example, of a hemorrhage, there occurs promptly an increased activity of the red cell forming function of the bone marrow with an outpouring into the circulating blood of many immature red blood cells. At the same time, as we should anticipate, there occurs a secondary or sympathetic stimulation of formation of the other blood elements which arise in the marrow, and so an increased number of white blood cells and perhaps of platelets appear in the blood count. Table 8 illustrates this picture:

TABLE 8.

Count on Third Day After Severe Hemorrhage.

Red blood cells	2,800,000
Immature R. B. C.	3%
Nucleated R. B. C.	+
Platelets	422,000
White blood cells	14,600
Neutrophilic leucocytes	79%

Here we note the low red cell count due to the loss of blood and at the same time the evidences of active red cell production which, if undisturbed, will restore this count to normal within a month. Normally there are about 0.5 to 1.0 per cent of immature red cells present in adult blood; these forms may be recognized by their appearing somewhat bluish in the usual Wright's stain preparations, or they may be more distinctly demonstrated by special staining of fresh blood. For our purposes it must suffice to point out that they increase and that even the still more immature forms, the nucleated red cells, appear in the circulating blood as a result of the abnormal red cell forming activity of the bone marrow. Also, we note the increase of the white cell count from its normal level of 8,000 to over 14,000, due to a spread of the activity in the marrow from the red cell forming centers to the white cell forming centers. As a result an increase of the predominant white cell of the marrow series, the neutrophilic leucocyte occurs. The same reasoning applies to the increase in platelets which usually occurs. Thus, we see that leucocytosis is often a feature in the blood count of secondary anemia and one must know this and not argue that the leucocytosis always and only speaks for the presence of in infection. This is a frequent and tempting error, for having assumed that an infection is present from the leucocytosis, one can then explain the anemia as due to the same infection. All of which would be wholly wrong in many cases.

In the child the general bone marrow re-

action to anemia may be very startling and has led to the resulting blood picture being considered a special disease and given a special name. By some it has been called "v. Jaksch anemia" and by others "pseudo-leucemic anemia of infants"; this latter on account of the great increase in white blood cells which often appears. Table 9 gives an illustrative example:

TABLE 9.
Severe Anemia in Infancy.

Red blood cells	1,800,000
Nucleated red cells	++
Platelets	400,000
White blood cells	81,700
Neutrophilic leucocytes	73%
Myelocytes	13%

This differs only in degree from the count illustrating secondary anemia in the adult. In the infant the white cell count increases greatly on slight provocation, as has already been mentoined in discussing leucocytosis, and in severe anemia it is common to find a white cell count of 30,000 and often it rises much higher, even to 100,000. With such a great increase it is not surprising to find that immature white cells of the marrow series, in other words myelocytes, appear in considerable numbers. In this table, then, we see the evidences of increased red cell production in the increase of immature forms; the evidences of a secondary stimulation of white cell production in the leucocytosis, the increased percentage of neutrophilic leucocytes and the appearance of myelocytes; and, thirdly, the evidence of increased platelet production.

It is easy to see how, with a white cell count of perhaps 75,000 and perhaps 15 per cent of myelocytes, a mistaken suspicion of leucemia might arise. This same suspicion has, in my own experience, arisen in a variety of cases of anemia, always as a result of the marked increase in the count of white cells and the appearance of immature forms in the blood. For example, I have seen the true nature of a sickle cell anemia overlooked because the anemia had called forth a considerable leucocytosis and a number of nucleated red cells. Similarly, a case of hemolytic anemia with the usual big spleen was thought to be leucemia because of a moderate leucocytosis.

The above remarks apply to those cases of anemia in which the marrow responds actively to the stimulus of the anemia. But there are many cases of more chronic secondary anemia in which the marrow is exhausted and fails to continue to respond. For example, a case of long-continued often-repeated slight hemorrhage will lead to a severe anemia with an exhausted bone marrow; the count of such a patient with hemorrhoidal bleeding is given in Table 10:

TABLE 10.
Chronic Secondary Anemia.

Red blood cells	2,300,000
Immature R. B. C.	Only occas.
Nucleated R. B. C.	0
Platelets	150,000
White blood cells	5,200
Neutrophilic leucocytes	64%
Lymphocytes	32%

In this blood picture we see the anemia in the low red cell count and the diminished number of immature red cells and the absence of nucleated forms tells us that the marrow is not actively restoring the blood to normal. Further evidence of the state of the marrow is seen in the lowered number of platelets and of white cells, espcially of the marrow series. Such a marrow failure may go on to a very extreme degree, sometimes from a continued drain on the body by some chronic cause, and at other times due to poisoning with some substance which particularly harms the marrow, as, for example, benzol or X-rays. Marrow failure of severe degree is termed aplastic anemia.

TABLE 11.
Aplastic Anemia.

Red blood cells	800,000
Immature R. B. C.	very few
Nucleated R. B. C.	0
Platelets	40,000
White blood cells	1,200
Neutrophilic leucocytes	4%
Lymphocytes	87%
Monocytes	9%

In this count, which is from a patient fatally poisoned by benzol used as a rubber solvent, we can see at a glance the evidences of the marrow's failure to supply red cells, platelets and white cells of the marrow series. In spite of the anemia, no increase in immature forms of red cells can be found, the platelets are far below normal in number and so are the white cells as a result of the almost complete disappearance of the types of white cell derived from the marrow; the neutrophilic leucocytes are present only to the extent of 4 per cent of 1,200 white cells instead of their normal 70 per cent of 8,000 white cells. Few

young neutrophilic leucocytes are seen and no myelocytes.

You may well wonder why such a blood picture is called an anemia when the reduction in white cells and in platelets is equally marked. The point is well taken and some term expressing general marrow aplasia would probably be better. The name aplastic anemia often, however, appears justified, since in many instances it is the anemia which appears first while the reduction in white cells and platelets is a secondary and later development.

There is another condition, called purpura hemorrhagica, in which the same blood picture as has been quoted for aplastic anemia may appear, with this important difference, however, that in purpura hemorrhagica the thrombopenia, as the reduction in platelets is often called, occurs for a long time before the anemia and reduced white cell count follow. In fact, the anemia may indeed be largely due to the bleeding which results from the low number of platelets in the blood. To make this picture clear let us look at Table 12:

TABLE 12.
Purpura Hemorrhagica.

Red blood cells	3,680,000
Immature R. B. C	+
Nucleated R. B. C	+
Platelets	30,000
White blood cells	15,400
Neutrophilic leucocytes	78%

In this count the important item is the extremely low platelet count. Already, however, there have occurred hemorrhages with some anemia. The marrow is responding to this anemia by increased red cell production, testified to by the increased number of young red cell forms, and, secondarily, the white cell count is increased. In a later case these evidences of marrow activity may fail and the blood picture approaches more and more closely to that of aplastic anemia. I believe that many cases of these two conditions are incorrectly diagnosed, being mistaken one for the other. In aplastic anemia often the platelets become seriously reduced in number, marked purpura may appear, and one seeing the case first at that time is tempted to make a diagnosis of purpura hemorrhagica. *Vice versa*, one may see a case of purpura hemorrhagica late after the anemia is marked and the white cell count low, and be misled into calling it aplastic anemia. The mistake may in some instances be a serious one.

TABLE 13.
Types of Marrow Failure.

	Result	Syndrome
Red blood cell	Anemia.	Aplastic anemia.
Platelet	Purpura	Purpura hemorrhagica.
White blood cell	Leucopenia	Agranulocytic angina ?

Table 13 expresses these facts in brief and includes the term agranulocytic angina. This is a recently described picture not thoroughly accepted as yet; in a person of low vitality a severe septic infection frequently in the throat may bring about an almost complete disappearance from the blood of the white blood cells of the marrow series. The end picture in each of these three conditions may be very similar.

So far I have been emphasizing the thought that the marrow tends to show changes in all three phases of its blood element producing function if one of these phases is disturbed. Stimulation of the production of a form of cell leads to the appearance of young cells of that type and a sympathetic or secondary stimulation of the other cell form occurs. Marrow failure, while perhaps being specific in its limitation to one cell form at first, tends to become in its later stages a general marrow failure. In these terms we have discussed leucocytosis, secondary anemia, aplastic anemia and purpura hemorrhagica. In all of these the changes in the blood count are apparently quantitative rather than qualitative.

Primary pernicious anemia, or Addisonian anemia, as I prefer to call it, presents a more difficult problem for analysis. Here we have a definitely qualitative change of the bone marrow resulting not only in a pathological marrow but also in a pathological blood count. Therefore, the group reactions of the marrow do not behave as they have in the conditions already referred to.

TABLE 14.
Addisonian Anemia.

Red blood cells	2,260,000
Immature R. B. C.	Normal
Nucleated R. B. C	+
Abnormal nucleated R. B. C.	+
Platelets	180,000
White blood cells	4,200

Here we see an anemia, not like those we have already discussed. It is not a simple secondary anemia, since the white cell count and the platelet count are not only not raised but actually lowered. It is not an aplastic anemia, as might be suggested by the low platelet count and the low white cell count, since the imma-

ture red cells are present in normal numbers and there are many nucleated red cells. In addition, the red cells are many of them abnormal in size and appearance, and the nucleated red cells of unusual size and appearance; but even without these supposedly characteristic changes, the diagnosis of Addisonian anemia is suggested by the above figures. The red cell production is proceeding but is abnormal and is keeping up under difficulties; there is not only no secondary stimulation of white cell and platelet formation, but a failure of these functions perhaps due to crowding of the mother cells of the white cells and of the platelets by a spread of the pathological and inefficient red cell forming tissues.

Two conditions remain for discussion, in each of which there occurs a very excessive production of one type of cell in the marrow, with secondary disturbances in the other two cell groups. The first of these conditions is polycythemia with its enormous increase in the red blood cell count; the other, leucemia with its analogous increase in white blood cells.

Polycythemia may appear as a secondary result of various disturbances of the heart or lungs, but this is not the type of polycythemia which we are discussing. Primary polycythemia is a disease of the blood in which the most prominent symptom is an enormous increase in the red cells usually with a great enlargement of the spleen. The next table gives a typical count:

TABLE 15.
Polycythemia.

Red blood cells	9,600,000
Immature R. B. C.	++
Nucleated R. B. C.	+
Platelets	480,000
White blood cells	22,000
Neutrophilic leucocytes	75%
Myelocytes	Occ.?

Here we recognize at once the great increase in the red cell count with the associated increase in the immature red cells and the presence of nucleated red cells. But there is more for both other groups of blood cells of marrow origin are increased; the platelet count is high and there is a very distinct leucocytosis of 22,000. The number of neutrophilic leucocytes is increased and an occasional myelocyte may be present, denoting by its immaturity the degree of disturbance of white cell production. In its secondary features, this count in polycythemia closely resembles that of a secondary anemia.

Leucemia is of several types, but in each there is an enormous increase in the white cell count, with the appearance of immature forms in the circulating blood. The more acute the case of leucemia, the more immature the cell forms. Table 16 gives the count in one type of case:

TABLE 16.
Chronic Myelocytic Leucemia.

Red blood cells	3,850,000
Immature R. B. C.	+
Nucleated R. B. C.	+
Platelets	+ or —
White blood cells	430,000
Myelocytes	41%

In this count the most conspicuous feature is the very high white cell count; 430,000 instead of the normal 8,000. This enormous increase is largely the result of increased numbers of the marrow series of white cells of which even the immature form, the myelocyte, which is present in normal blood only occasionally and in very small numbers, forms over 40 per cent. This betokens the great activity of white cell production, and, furthermore, the fact that this white cell production is abnormal not only quantitatively but also qualitatively. Secondary disturbances of red cells and of platelets are common, as might be expected if the line of thought which we are following is correct. Early in the case there may be no anemia and no change in the platelet count, but soon the white cell producing tissues encroach on the other marrow tissues and the red cell and platelet production is disturbed. Anemia results, as in the above count, in spite of the best efforts of the remaining red cell producing tissues, evidenced by the increased number of immature red cells and nucleated forms. In a late case the anemia may become severe and the platelets greatly reduced, and at autopsy on such a case the entire marrow seems to have been entirely devoted to white cell production. It is on this basis that one can explain the fact that many a severe leucemia seems to die of anemia and that in the later stages purpura, due to the greatly reduced number of platelets, is often a conspicuous symptom.

The same tendency for the marrow to show a reaction in all three phases of its blood forming function, which we have been emphasizing throughout, enters very disastrously into our treatment of polycythemia and leucemia. We can, with X-rays or other means, lower the red

cell count of polycythemia, but simultaneously there occurs a lowering of the white cells and platelets. If the treatment is persisted in until the red cell count has been brought down to normal and kept there for some time, a very dangerous reduction in white cells and in platelets tends to appear. In leucemia the X-rays or benzol will rapidly bring the white cell count down even to normal or below, but there is great danger that the coincident effect of the treatment on the diminished red cell and platelet forming function of the marrow will bring about a serious purpura and a fatal anemia.

We see, therefore, that in therapy as well as in diagnosis we must keep in mind not only the one cell type in which the chief change from normal happens to have occurred in a given case, but also the secondary features of the blood count. This view of the blood count, which I am stressing, is, of course, nothing new; it is as old as blood counting itself; it is based on the origin of the blood elements. Its importance, however, has not been sufficiently emphasized; attention has too much been centered on the chief change in the count and not enough on the secondary changes, such as the white cells in anemia, the red cells in leucemia, the platelets in aplastic anemia. With this point of view which I am presenting, one could not be led into suspecting a leucemia on the basis of a leucocytosis with myelocytes in an anemic infant, nor into confusing a case of purpura hemorrhagica which has become anemic from hemorrhage with aplastic anemia. One could not fail to appreciate the caution with which a good roentgenologist goes about the treatment of a leucemia with X-ray.

Hematology has a bad name with the profession because of its use of many and long names and many and varied methods and theories. It deserves a better reputation. In its simplest and most practical form it is still an extremely valuable aid to the practicing physician and surgeon. He need never know how to make a count himself if only he knows when to have one made and how to interpret it. He need not be able to recognize a myelocyte or an immature red cell if only he knows the significance of their occurrence in the blood. What is needed is a sure knowledge of the essentials; they are not many; they are not difficult. It is these which I have attempted to review.

Finally, let me warn against that familiar failing—a feeling of certainty based on a little knowledge. Leucocytosis, for example, does not always signify infection. It occurs, we have seen today, both in polycythemia and in secondary anemia. Severe anemia is not always pernicious; it may be secondary to a great variety of conditions, including leucemia and purpura hemorrhagica. Keep the origin and relationships of the small number of important blood elements clearly in mind and the tendency of a disturbance of one to influence the others, and I feel sure that blood counts will in the future become of greater and greater interest and usefulness to you.

University Hospital.

MASSIVE COLLAPSE OF THE LUNG.—REPORT OF FOUR CASES.*

By HUGH H. TROUT, M. D.,
and
HARRY M. HAYTER, M. D.,
Roanoke, Va.

The term massive collapse of the lung was first used by Pasteur,[1] in 1890, in describing the condition of the lower lobes of lungs found in cases, which came to necropsy, of post-diphtheritic paralysis of the diaphragm. In 1908,[2] he reported cases of collapse of the lung following operations. Since that time many such cases have been reported.

During the past six years especial attention has been called to this condition due to the increased frequency with which it is noted as a post-operative pulmonary complication. This increase is in all probability due to the fact that previously the condition has escaped recognition, for, once it is recognized in a clinic, successive cases are discovered, and one finds massive collapse of the lung to be a complication which up to that time had not been considered.

In a recent article, Scott[3] has given a review of the literature concerning this condition and a study of the cases reported, with detailed reports of four additional cases.

The condition is a definite clinical entity. Observation has not extended over a sufficient period of time to determine the relative frequency with which it occurs. According to the study of Scott, the onset of symptoms is within twenty-four hours in 50 per cent of the cases,

*Read before the Southwestern Virginia Medical Society, at Roanoke, Va., March 31, 1926.

after forty-eight hours in 20 per cent, and 10 per cent are classified as latent as they complain of practically no symptoms.

The symptoms most frequently noted are pain in the chest, difficult and rapid respiration, cyanosis, rapid pulse, elevation of temperature, cough, and expectoration. These may develop very suddenly or develop gradually over a period of several hours. The severity of the symptoms depends upon the amount of lung involved in the process. Likewise, the physical signs will be governed by the extent of the process.

The signs noted are depression of the chest wall and limitation of the respiratory excursion on the affected side. Percussion note over this area may be hyperresonant or markedly impaired. The breath sounds may be diminished or bronchial in character. The same case may give each type at different stages. Rales may or may not be present in the early stages; however, they are usually present as the condition begins to subside, and are of the coarse musical variety. Voice sounds are intensified or suppressed corresponding to the intensity of the breath sounds. The heart is displaced towards the affected side, the degree of displacement depending upon the amount of lung collapsed. The patient usually lies on, and with the head flexed towards, the affected side. This was noted in three of the cases reported in this article.

X-ray examination shows marked density of the area involved, with the displacement of the mediastinal organs toward the affected side.

The prognosis is good. The acute symptoms usually subside within twelve to forty-eight hours. The physical signs may clear up within three or four days, or it may require two weeks or more for the physical signs to return to normal.

The etiology of massive collapse of the lung is not known. Various theories have been offered to explain the mechanism by which the condition is produced. Pasteur assumed that the condition is due to a reflex inhibition of the movements of the diaphragm. Elliott and Dingly[4] assume the condition to be due to obstruction of the bronchioles by mucus, followed by absorption of the air contained in the alveoli. Briscoe's[5] view differs little from that of Pasteur, yet he suggests the additional factor that, due to the inflammation of the diaphragm and the pleural membrane covering it, the diaphragm, its synergic and antagonistic muscles are out of action; also, that a condition of collapse is favored by the posture and shallow type of breathing found in such cases. Scrimger[6] offers the explanation that the abdominal interference may, through a normal vagus control, cause a contraction of the muscular elements in the lung, namely, the bronchioles, and this, aided by a subsequent collection of mucus, is sufficient to prevent the passage of air beyond the obstruction. Absorption of the alveolar air would leave the lung in a condition of collapse.

Bradford[7] concludes that the collapse can be more readily explained as a result of the immobility and retraction of the chest wall and diaphragm than if regarded as due to bronchial spasm, yet states that spasm of the bronchioles would probably be a sufficient explanation of the condition if we could surmise how it could be brought into action. Scott offers the possibility of a vasomotor reaction causing oedema of the mucous membrane lining the bronchioles, a condition somewhat similar to angioneurotic oedema. Thus, an obstruction is produced and, as he thinks, is maintained by tenacious secretions which are poured out into the bronchioles as a result of a low grade type of infection set up within the involved area.

The anaesthetic seems to play no part in the production of this particular type of pulmonary complication, as the condition develops in some cases which have had only a local anaesthetic. Furthermore, cases are reported in which the lung collapse has developed following injury and in which no anaesthetic has been used. The four cases reported in this article received ethylene anaesthesia, as this anaesthetic is being used in practically all of our cases with acute abdominal conditions. Considering bronchial secretions as one factor in the production of massive collapse of the lung, then, in those cases which require a general anaesthetic, ethylene would be the one of choice, as it causes little irritation to the respiratory tract.

After studying our own cases of massive collapse of the lung, we feel that the factors suggested by Scrimger, plus an interference with the normal respiratory mechanism, offer the most plausible explanation of the manner in which this condition is produced. Broncho-

scopic examinations in cases with lung collapse, and post-mortem findings in two cases which were recently reported by Jackson and Lee,[8] certainly emphasize the fact that the collections of thick tenacious mucus are definite factors in producing an obstruction in the bronchial tree.

Treatment is largely symptomatic. Morphia is used to quiet and to relieve the patient during the stage of acute symptoms. Scott reports observations on one case treated with atropin, the position of the heart being determined by fluoroscopic examination. The drug was administered until its physiological effect was produced and there was no change in the position of the heart. Following further administration, the heart shifted more than a centimeter towards the collapsed lung and the patient's symptoms became more pronounced.

We have used atropin in three cases with massive collapse and in one which we thought was developing this condition. The position of the heart was not followed by the fluoroscopic screen. However, following the administration of atropin these patients seemed relieved. If the improvement was due to atropin and not merely coincident with its administration, it may have been brought about by a relaxation of the bronchial spasm and an inhibition of the bronchial secretions. The role of atropin is, of course, open to question; however, we feel that it is worthy of consideration in the treatment of massive collapse of the lung.

Report of Cases

Case No. 1.—T. B. A., female, age 15 years, white. Admitted 11 P. M., Sept. 19, 1924.

Complaint: Abdominal pain of three days' duration.

Past History: Patient had never been robust, yet her general health had been good.

Present Illness: Three days previous to admission, the patient began having pain in the lower right quadrant of the abdomen. This gradually increased in severity, with development of nausea and vomiting. Tenderness developed in the lower right quadrant shortly after the onset of pain. Bowels had moved regularly. No dysuria. Patient had had a cold, sore throat, and cough for several days. Menstrual period began on the morning of admission.

Physical Examination: Temp. 101; pulse 112; resp. 22. Cheeks were flushed. Pharynx was moderately inflamed. Lungs were clear. Heart sounds were normal. The apex was in the 5th interspace just inside the midclavicular line on the left side. The abdomen was scaphoid. There was definite muscular rigidity on the right side, with tenderness on pressure over the lower right quadrant. No mass was palpable. Right thigh was held in slight flexion. W. B. C. 20,000. Urine: Albumen +; pus +.

Diagnosis: Acute appendicitis.

Operation: Patient was operated upon at 12:20 A. M., Sept. 20th. Under ethylene anaesthesia an acutely inflamed appendix was removed through a McBurney incision and the abdomen closed without drainage.

Post-Operative Course: Sept. 20th.—Patient had very little discomfort. At 11 A. M., temp. 99; pulse 80; resp. 20.

Fig. 1. Case No. 1.—September 22nd. Collapse of the right lung. Marked density of lung shadow with the mediastinal organs displaced to the right.

Sept. 21st.—At 7:30 A. M., the patient complained of pain in the right side of the chest. Temp. 101; pulse 110; resp. 24. Temperature, pulse and respiration gradually increased during the day. Patient was perspiring profusely. At 12 P. M., temp. 103.2; pulse 132; resp. 48. The right chest wall was immobile.

Percussion note was hyperresonant over the entire right lung. Breath sounds were tubular in quality on the right side. There were no rales. No displacement of the heart was noted. No cyanosis. Patient was lying on her right side and was having an occasional cough.

Sept. 22nd.—At 10 A. M., the patient's condition showed little change other than marked displacement of the heart to the right side. Temp. 103.2; pulse 140; resp. 40. Patient X-rayed (see Fig. 1).

Sept. 23rd.—Temp. varied from 100 to 103 during the next 24 hours. Distant tubular breath sounds were heard over the right lung with numerous coarse rales. No change in the cardiac displacement. Considerable cough with blood-tinged tenacious sputum.

Sept. 24th.—At 9 A. M., temp. 98.6; pulse 90; resp. 30. Patient was very comfortable. She continued to raise blood-streaked tenacious sputum. There was no change in the position of the heart.

Fig. 2. Case No. 1.—September 27th. Marked displacement of the mediastinal organs. Lung shadow less dense.

Sept. 27th.—Temp. had not been above 99.2. Pulse normal. Heart was still displaced to the right side. (See X-ray, Fig. 2). From this date the patient's course was uneventful. However, the heart was slow in returning to its normal position, as on discharge, sixteen days after onset, it still showed slight displacement to the right. (See X-ray, Fig. 3).

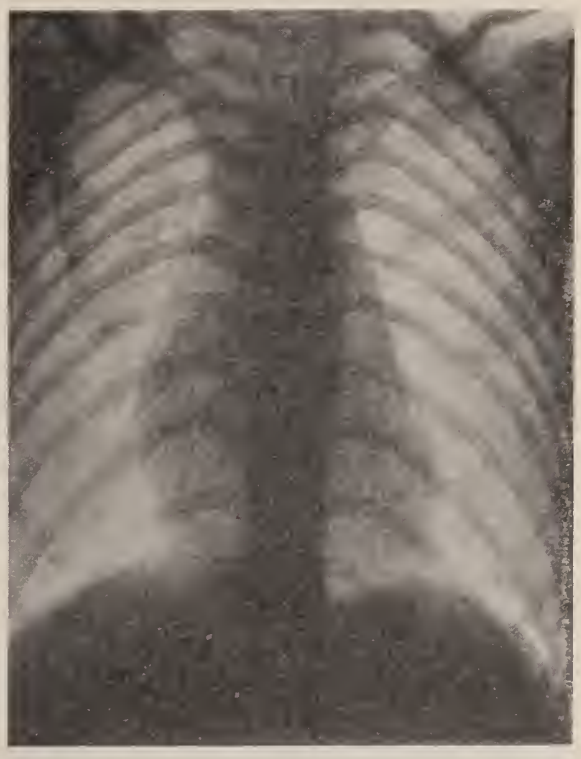


Fig. 3. Case No. 1.—October 6th. Lung clear. Slight displacement of the heart to the right.

Treatment in this case consisted only of morphia to relieve and quiet the patient, in addition to the routine post-operative care.

Case No. 2.—L. O. L., male, age 16 years, white. Admitted 11:50 A. M., Oct. 23, 1924.

Complaint: Abdominal pain of 24 hours' duration.

Past History: Pertussis six months ago. General health excellent.

Present Illness: About 24 hours prior to admission, the patient began having generalized abdominal pain. The pain later localized in the lower right side of the abdomen. Tenderness developed in this area soon after the onset of pain. He had been nauseated and had vomited several times. He had had no dysuria. He had had a mild cold for several days.

Physical Examination: Temp. 99; pulse 96; resp. 20. The physical examination was essentially negative except for the abdomen. There was moderate muscular rigidity on the right side, with tenderness on pressure over

the lower right quadrant. No mass was palpable. W. B. C. 21,000. Urine: Albumen +: pus, trace.

Diagnosis: Acute appendicitis.

Operation: Patient was operated upon at 12:20 P M., Oct. 23rd. Under ethylene anaesthesia, a very acutely inflamed appendix was removed through a McBurney incision. The abdomen was closed without drainage.

Post-Operative Course: Oct. 24th.—Uneventful 24 hours. Temp. 99.6.

Oct. 25th.—Patient having occasional mild attacks of coughing. Temp. 99; pulse 90; resp. 20. At 3 P. M., the patient complained

Fig. 4. Case No. 2.—October 25th. Collapse of the middle and lower lobes of the right lung. Heart displaced to the right.

of pain and soreness in his right chest and of shortness of breath. At 7:30 P. M., the patient became cyanotic. Resp. 32; pulse 132, weak and irregular; axillary temperature 104. The right side of his chest was retracted and the respiratory excursion markedly decreased. Patient would lie only on his right side. Percussion note was tympanitic over the entire right lung. Breath sounds were tubular in quality with numerous coarse rales. The heart was markedly displaced to the right side. (See X-ray, Fig. 4). Patient did not receive morphia. Atropine gr. 1/150 administered hypodermatically q. 3 hours, beginning at 8:20 P. M. At 8:30 P. M., the respirations were less labored and the patient was expectorating blood-tinged sputum.

Oct. 26th.—At 12:30 A. M., axillary temp. was 102; pulse 128; resp. 28. Patient was sleeping and rested well during the remainder of the night. Oct. 26th, at noon, the patient was comfortable. Temp. 98.6; pulse 80; resp. 20. Atropine was discontinued.

Oct. 27th.—Moderate cough with blood-tinged sputum. Breath sounds were distant over the right base with numerous coarse rales. Heart returning to normal position. (See X-ray, Fig. 5). Recovery uneventful.

Fig. 5. Case No. 2.—October 27th. Heart returning to normal position. Lung expanding.

For X-ray Oct. 29th, see Fig. 6.

Case No. 3.—R. J., male, age 16 years, white. Admitted 6:10 P. M., Jan. 4, 1925.

Complaint: Abdominal pain, nausea and vomiting.

Past History: Essentially negative.

Present Illness: Four days previous to admission, the patient began having generalized

abdominal pain associated with nausea and vomiting. This continued for one day, after which the pain localized in the lower right quadrant, with the development of tenderness in this area. These symptoms persisted to date of admission. The patent was given a large dose of castor oil at onset of symptoms.

Fig. 6. Case No. 2.—October 29th. Lung clear. Heart in normal position.

His bowels moved freely. He had had no dysuria. Had had a cold for about one week.

Physical Examination: Temp. 101.6; pulse 108; resp. 22. General physical examination was essentially negative with exception of the abdomen. There was marked rigidity over the entire abdomen, with tenderness throughout, yet the tenderness was more marked in the lower right quadrant. W. B. C. 20,000. Urine: Albumen, trace; pus, trace.

Operation: The patient was operated upon at 7 P. M., Jan. 4th. Under ethylene anaesthesia the abdomen was opened through a McBurney incision. On opening the peritoneum, a considerable amount of free pus escaped. A gangrenous appendix was removed and the abdomen closed with drainage.

Post-Operative Course: Jan. 5th.—At 7 A. M., the patient's temp. was 102.2; pulse 106; resp. 22. At 4 P. M., he began complaining of a "choking sensation." Temp. 102.4; pulse 100; resp. 28. There was a slight cyanosis. He complained of severe abdominal pain. He had coughing attacks during which considerable thick mucus was raised. Examination of the chest showed the heart displaced to the right side, occupying a position in about the middle of the chest. Percussion note over the right base was dull. Breath sounds were distant and tubular in quality over this area, with numerous coarse rales. Diagnosis of massive collapse of the right lower lobe of the lung was made and confirmed by X-ray examination. Patient was given morphia gr. ⅛ and atropin gr. 1/200 q. 3 hours. He had a very comfortable night.

Jan. 6th.—At 11 A. M., temp. 101.4; pulse 114; resp. 28. Little change was noted during the day. Morphia was discontinued and atropin gr. 1/150 was given q. 3 hours. Patient slept well from 10 P. M. until 6 A. M. the following morning.

Jan. 7th.—Temp. 99.8; pulse 90; resp. 20. Percussion note was resonant over the right lower lobe. The rales persisted.

Jan. 8th.—Heart was occupying a normal position. Recovery uneventful. Temperature did not go above 99.8.

Case No. 4.—J. H., male, age 22 years, white. Admitted Nov. 29, 1925.

Complaint: Chronic indigestion and attacks of abdominal pain.

Past History: General health had been good with the exception of frequent attacks of tonsillitis.

Present Illness: During the past five years the patient had had frequent attacks of epigastric pain, accompanied by slight nausea. This usually lasted about three hours. Following the attacks, moderate tenderness developed in the lower right abdomen. Since the beginning of these attacks, he had frequent gaseous eructations and some abdominal discomfort following meals. The present attack began three days previous to admission.

Physical Examination: Temp. 98.8; pulse 70; resp. 20. The patient was a well-developed, robust young white man. The physical examination was negative except for the abdomen. The right abdomen showed moderate

rigidity and tenderness, the tenderness being most marked just to the right of the umbilicus. No mass was palpable. W. B. C. 13,000. Urinalysis: Negative.

Diagnosis: Acute appendicitis.

Operation: Patient was operated upon at 9 A. M., Nov. 30th. With the patient under ethylene anaesthesia, the abdomen was opened through a right rectus incision. The appendix was found to be high up behind the cecum. It was moderately inflamed, tightly bound down by adhesions, with the tip posterior to the fundus of the gall-bladder. The appendix was removed and the abdomen closed without drainage.

Post-Operative Course: During the first two days the patient had slight cough with tenacious mucoid sputum. Temp. varied from 98.6 to 100.6; pulse 84; resp. 20.

Fig. 7. Case No. 4.—December 2nd. Collapse lower lobe of right lung. Heart displaced to the right.

Dec. 2nd.—At 11 A. M., he complained of severe abdominal pain. Temp. 100.6; pulse 124; resp. 22. The mucus in his throat was causing him considerable discomfort. At 2:40 P. M., temp. 104.2; pulse 130; resp. 30. His face was flushed and his lips were slightly cyanotic. Physical examination showed the right chest retracted and moving very little on respiration. Percussion note was dull over the right base. The heart was displaced to the right. The breath sounds were distant and tubular in quality over the right base. No rales were heard. Percussion note over the left lung was hyperresonant. X-ray examination revealed a collapse of the lower lobe of the right lung, with the mediastinal organs displaced to the right. (See Fig. 7). Atropin gr. 1/100 was given hypodermatically at three hour intervals.

Dec. 3rd.—Patient had a very comfortable night. Had moderate cough productive of thick yellowish sputum. Temp. 99; pulse 100; resp. 24. Percussion note over the right base was slightly impaired. Breath sounds were slightly exaggerated with coarse rales at the end of inspiration. X-ray showed the heart approaching normal position and slight clouding of the lower lobe of the right lung. (See Fig. 8). Atropin decreased to gr. 1/150 q. 3

Fig. 8. Case No. 4.—December 3rd. Condition rapidly subsiding.

hours. Patient had only an occasional cough. W. B. C. 16,000.

Dec. 4th.—Patient was very comfortable. Temp. 98.6; pulse 88, resp. 22. Examination of the chest was negative. X-ray showed right lung clear and the heart in normal position.

Atropin was discontinued. The patient made an uneventful recovery from this date.

REFERENCES.

1. Pasteur: *Am. J. of M. Sc.*, 1890, page 242.
2. Pasteur: *Lancet*, 2:1351, 1908.
3. Scott: *Archives of Surg.*, 10:73, Jan., 1925.
4. Elliott and Dingly: *Lancet*, 1:1305, 1914.
5. Briscoe, J. C.: *Quart. Med.*, 13:293, April, 1920.
6. Scrimger: *Surg. Gyn. & Obs.*, 32:482, June, 1921.
7. Bradford: *Quart. Med.*, 1918-1919.
8. Jackson and Lee: *Ann. of Surg.*, Vol. 82, No. 3, Sept., 1925.

HERNIAS.*

By E. M. TOWNSEND, Surgeon (R), U. S. P. H. S., Norfolk, Va.
U. S. Marine Hospital No. 82.

The frequency and many varieties of hernias make them interesting and the passage of the "Workmen's Compensation Act" in the many states increases their importance from an industrial and economic standpoint. It is estimated that a hernia lessens an employee's efficiency 25 per cent. Colcord collected questionnaires covering about 500,000 examinations. Of those examined 10 per cent had open rings and 2 per cent had hernias. Colcord examined 9,000 men and found 1.7 per cent had hernias. McCullough examined 8,000 men for employment, 1.4 per cent were rejected on account of hernias. Keith, in "*British Medical Journal*," states it is estimated that 20 out of every 1,000 male inhabitants of Great Britain are ruptured.

From the standpoint of age incidence the study of a large group shows that during the first year of life 44 of every 1,000 babies are ruptured. Between the ages of 6 and 10, the most immune period, 6 per 1,000. After this an increase is noted. The following tables illustrate our series. All these patients were treated at U. S. Marine Hospital No. 82, Norfolk, Va. All were adult males, beneficiaries of the Public Health Service and representative of the beneficiaries treated in the 25 marine hospitals and 128 other relief stations of this Service.

Admissions 12,490. Hernias 420 in 359 patients or 2.8 per cent. 332 operated. Mortality, none.

Keith attributes the occurrence of inguinal hernia to failure in the mechanism of the inguinal "shutter." This apparatus is represented by the contractile conjoined muscle whose action against the fixed Poupart's ligament serves to close the peritoneal area of weakness—occupied by the transversalis fascia. The shutter is worked by a reflex nerve mechanism. Other writers refer to the inguinal sphincter. Owing to the lack of food during the great War, hernias in Germany increased 25 per cent.

Heredity undoubtedly plays a part as statistics show that 25 per cent give a history of hernia in their parents or grandparents. Hypoplasia of the structures around the rings and canals following disease or incidence to old age plays a part. These factors, plus the congenital predisposition to hernia in man, combined with the activities of life and increased intra-abdominal pressure, can be well considered as a cause in their production. Straining increases the intra-abdominal tension 100 m.m. of mercury.

Of the various types as shown in the table, by far the larger number being right side indirect inguinal hernias, we naturally wonder why right side hernias predominate. Many explanations are offered. The majority of people are right handed, which puts more strain on the right side of the body. The many operations performed through right-side abdominal incisions predispose to right side inguinal hernias, due to injury to the nerves, blood vessels, muscles and fascia at time of operation, and by drainage tubes, suppuration of fascia and muscles around the internal ring, and injury to the ilio-hypogastric and ilio-inguinal nerve certainly predispose to hernia.

Hoguet reported 190 operations for acute appendicitis with inguinal hernias following in 8 cases. Griffiths reported 11 cases, 10 of which followed the McBurney incision. We recently operated a case in which the post-operative ventral and right inguinal hernia which followed the appendectomy were both repaired through the same incision. I believe nerve injury was responsible for these hernias and not suppuuration of muscle and fascia.

Lockwood explains the greater frequency on right side by the inclination of the mesentery towards the right iliac fossa. Knox attributes it to the greater size of the right side of the pelvis as compared to the left. Embryological development is undoubtedly a factor favoring greater frequency on the right side. Of the 6 femoral hernias, 5 were on the right side and 1 on left.

*Read before the Norfolk County Medical Society, at Norfolk, Va., October 5, 1925.

	Total	Bil.	Indirect		Direct		Operated No.	Anaesthetic	
			Right	Left	Right	Left		General	Local
Hernia Indirect Ing.	364	57	207	157			269	259	10
Hernia Direct Ing.	14	3			9	5	12	10	2
Hernia Ventral	6						3	3	
Hernia Ventral P. O.	18						11	11	
Hernia Lumbar P. O.	2						1		1
Hernia Femoral	5	1					6	6	
Hernia Umbilical	2						1	1	
Hernia and Hydrocele			4	1			5	5	
Hernia and Varicocele			1	10			7	7	
Hernia Undescended		1	8	1			8	8	
Hernia Strangulated	8		6	2			8	8	
Hernia Traumatic	1		1				1	1	
Total	420	62	227	171	9	5	332	319	13

Hernia and Appendectomy 34 or 10.2 per cent.....32 2

Recurrent Hernias Operated in this Series:

Ventral	Direct Ing.	Indirect Ing.	Saddle Bag	Total	Per Cent
1	4	5	0	10	3.01

Complications, etc., observed:

Painful Post-Operation Scars	Atrophy Testicle	Adhesions	Resect. Intest.	Accidental Vasotomy and Repair	Post-Operation Hemorrhage
8	1	1	1	2	1

Retracted Testicle	Iliac Vein Punctured	Deep Artery Epigastric Ligated	Truss on a Bubo	Paraffine Method	Silk Worm Gut Repair with Sinus
1	1	1	1	1	1

Compensation Hernias:

Total 71, or 19.7 per cent of all patients. Average time in Hospital, 29.9 days.

Veterans Bureau, 37.
37 x 30 days x $3.80 per day = $4218.00
37 x $82.50 per mo. = $3052.50
$7270.50

Employees' Compensation Commission, 34.
34 x 30 days x $3.89 per day = $3967.80
34 x $66.66 per mo.
for 6 weeks = $3400.00
$7367.80

Total Compensation, $14,638.30.

Hernia and hydrocele—4 on right side and 1 on left side.

Hernia and varicocele—10 on left side and 1 on right side. The cause of the right side variococele was probably due to pressure.

Hernia and undescended testicle—9 on right side, 2 on left, and 1 bilateral. The greater frequency on right side is anatomical. The increased blood supply and weight of left testicle favors descent. There is a delayed descent on right side and a later closure of the canal. This favors the right side till puberty. Hernia and undescended testicle require no special operation for the hernia. Treatment should be to preserve the testicle. If it is as high as the internal ring it can be placed in the abdominal cavity. It is important from an endocrine standpoint. It should, if possi-

ble, be placed in the scrotum. A truss should never be advised. From the fourth to twelfth year is the most advisable time to operate.

Bevan's operation is advised, the vessels being severed when necessary in about 10 per cent of the cases. The vas is generally long enough and extra length can be gained by dissecting the vas free at the testicle. I find suturing the cord to the pillars of the external ring keeps the testicle down and there is no danger of constricting the blood supply. The atrophied undescended testes do not grow after being placed in the scrotum. Patients should be told this, as later they may blame the surgeon for the atrophy of the testicle. The normal undescended testicle when operated prior to puberty tends to develop normally. If the testicle can be placed in the scrotum without severing the blood supply, this should be done. Then there is no danger of gangrene of the testicle. Extreme gentleness in handling the testicle should be observed, as trauma at operation may be more responsible for gangrene than severing the vessels. Gentleness will prevent a lot of the post-operative pain and swelling. The scrotum should be supported. It generally gets black, due to small hemorrhage from dilating to make sufficient room for the testicle.

Eight strangulated hernias were operated, 6 right side and 2 on left. The greater frequency of right side hernias and greater length of mesentery on right side can be attributed as a cause of the greater frequency on right side. The greater frequency of right side hernias would naturally favor a larger percentage of the special varieties on the right side. The strangulated hernias were operated immediately after admission and all 8 made an uneventful recovery. Resection was not done in a single case. If the mesentery is not too badly damaged and blood supply present, a very discouraging gut will clear up. I have replaced several that looked very doubtful but after a few days of distention, hot packs and repeated small s.s. and g. enema, this subsided. It is advisable to wrap the badly damaged gut with omentum and it is claimed that if an incision down to the muscularis bleeds normally the gut can be returned safely. A two stage operation is necessary if the patient is not in good condition. Local anaesthesia should be used and shock combated. If complete obstruction is present with severe shock and toxemia, enterostomy or colostomy, under local, is advisable and saline hypodermoclysis—3,000 c.c. daily. Saline is as beneficial in these cases of strangulation and incarceration as in acute intestinal obstruction from other causes for the same reason—"a deficiency of chlorides." Local anaesthesia, a two stage operation, and saline are urged for the critical cases of incarcerated or strangulated hernia.

Of the 23 ventral hernias, 11 were operated. One patient twice, and he now has a ventral hernia. This patient developed a post-operative pneumonia and states while coughing and sneezing he again ruptured himself the second week after operation. Coughing and vomiting after operation is a factor in producing operative failures, as it has been shown that it increases the intraabdominal tension. An overlapping of the fascia is necessary: chromic catgut should be reinforced with a few interrupted kangaroo sutures. The Mayo operation for umbilical hernia is most satisfactory, —a transverse overlapping of the fascia, the lower flap being taken up under the upper, mattress sutures being used.

In this series 36 appendectomies were done at same time the hernias were repaired, many of which showed evidence of chronic inflammation, as adhesions and masses in appendix. Several on section showed chronic inflammation. The appendix, if accessible and there is any evidence of inflammation, should be removed. It is advocated by some as a routine procedure. Appendiceal pain is occasionally attributed to right side hernia and small right side hernias are occasionally overlooked and the appendix blamed for the trouble. In doing herniotomies on seamen I favor removal of the appendix, if possible, through the hernia incision. It takes but little longer, convalescence is the same, and a seaman is better off with his appendix out. Torek advises a longer incision and describes a special combined operation for herniotomy and appendectomy. Cohen also describes a combined right inguinal hernia and appendix operation and states that in a considerable number of cases the cecum and occasionally the ileum is found adherent to the sac, and a simple herniotomy would leave a chronic appendicitis and adhesions with their concomitant symptoms of pain and intestinal disturbance.

Acute appendicitis occurring after herniotomy is illustrated in the following case:—

L. F., No. 3962, admitted to hospital and hernia repaired January 17, 1921. Patient 15 days later, February 1, 1921, developed an acute appendicitis. Appendectomy February 1, 1921. Fifteen days prior to the attack of acute appendicitis would have been an ideal time for an appendectomy.

If the appendix cannot be removed through the hernia incision it should be manipulated as little as possible. If it has to be left behind, manipulations may start up an appendicitis during the convalescence from the herniotomy. Especial care should be exercised in handling the stump to prevent infection of the wound, as an infection would predispose to recurrence of the hernia. This is more important than in the usual appendectomy.

The following case will illustrate the necessity of locating and removing the appendix:—C. L., No. 12362, admitted to hospital October 8, 1925. Patient stated he had been ruptured on both sides since 7 years of age and that in October, 1925, (exact date not given), while carrying fittings for ship at laid up steel fleet he strained himself. Continued to work, but the pain remained, being worse on walking. Three days prior to admission the pain got worse and caused him to come to hospital for relief. Chief complaint was pain in region of right internal ring and a bilateral inguinal hernia. Examination showed that patient had a complete indirect hernia on right side and a small direct hernia on left side. Blood pressure 140/85. No trouble at this time was suspected with the appendix. Temperature 99 for two days prior to operation October 12, 1925—4 days after admission. At operation, after the hernia sac was opened, retractors were inserted and a coil of intestine pushed aside and appendix located. Tip appeared large and terminal 2 inches larger than normal and edematous. Many adhesions were around base of appendix. After removal, section showed 4 fairly hard, small fecal masses in appendix. This was unquestionably the cause of his pain and temperature. Repair of the hernia would not have relieved this patient of his pain and it is very probable that had his appendix not been removed at this time an appendectomy would have been necessary later. A special incision is generally not necessary. Traction upwards and inwards generally gives ample room. The incision can be extended upwards when indicated.

The two lumbar hernias both followed kidney operations and the hernias presented in the region of Petit's triangle as a lumbar and ventral hernia combined, one of which was operated on account of the pain and weakness which disabled him from his usual occupation as a seaman. The other patient refused operation. The history and technique as used in the one operation may be of interest:

M. L., seaman, age 51, admitted September 11, 1925. In 1901 patient had a tuberculous right testicle removed. In 1903 patient had a left nephrectomy done for a T. B. kidney. About three weeks after operation he was lifting up on a tight window and felt something tear on left side and had some pain in back. At first the swelling in side was small, but gradually grew larger until it has reached the size that it feels like the whole insides are coming out. Worse on exertion. Chief complaint was hernia, left side abdomen and lumbar region. Physical examination showed a fairly well-developed male adult. Weight 130 lbs. Height 66 inches. Heart not enlarged. Rate normal. Systolic murmur at apex transmitted to left axilla. Blood pressure 80/50. Lungs negative. Abdomen showed linear scar 10 inches long parallel with 12th rib. There is a large bulging mass, increased on straining, large enough to accommodate approximately 1/5 of patient's intestines. Urinalysis showed sp. gr. 1,020; albumen, positive; pus present. Kidney function 40 per cent first hour, 15 per cent second hour,—total 55 per cent. Wassermann negative in all antigens. Patient was confined to bed and digitalized. Twenty days after admission patient was operated. Paravertebral anaesthesia supplemented with skin infiltration along area of old scar. Five c.c. 2 per cent procaine and adrenalin was injected between 9th and 10th, 10th and 11th and 11th and 12th spinal vertebrae, hoping to block the ilio-inguinal and ilio-hypogastric nerves, which, from total absence of pain must have been successful. Patient only complained of a sensation of heaviness when intestines were packed off. The various structures were imbricated, interrupted catgut and kangaroo tendon being used. Recovery was uneventful except abdominal distention which was relieved with enema, rectal tube and heat. Patient is now up and about. No evidence of hernia. Rest and an abdominal binder for 6 months advised. There is no doubt but pa-

tient was correct as to cause of this hernia, as the nerves were found intact and very little atrophy present, which facilitated healing after repair. Para-vertebral blocking was especially useful in this case where general anaesthesia was contra-indicated.

The living suture of Gallie is finding a distinct place in the repair of hernias, especially of the recurrent type. The fascial strip is easily obtained from the thigh and with the large eyed fascia needle is easily used. Too much tension should not be placed on this suture and the overlacing is advised. By retracting the skin incision on outer side of thigh an 18 to 22 inch suture ¼ inch wide can be obtained through an 8 or 9 inch incision.

The following case was repaired with the fascial suture:—M. G., age 53, white, male, weight 168, from the Coast Guard Service, was admitted to hospital June 4, 1925. Diagnosis—cholelithiasis. Family history negative. Chief complaint—abdominal pain and jaundice. Examination showed rigidity and tenderness upper right quadrant over gall-bladder region. Skin markedly jaundiced. Small superficial subcutaneous hemorrhages under skin, dorsum right hand. Bowels constipated. Stools white. Urine almost black in color. Heart and lungs negative. Blood sugar .198; red blood count 4,880,000; white blood count 5,000. Hemoglobin 78 per cent. Blood negative for malaria. Urinalysis showed albumen 2 plus, pus 4 plus, bile present, sp. gr. 1005. Wassermann negative. June 8, 1925, cholecystectomy was done and gall-bladder and two stones removed. Common duct opened and tube inserted. August 30th, tube removed. September 5th, sinus healed. Ventral hernia present. September 28, 1925, ventral hernia repaired. Fascia overlapped and sutured with No. 3 chromic catgut and kangaroo tendon, reinforced with a strip of fascia. From a 9 inch incision in left thigh a suture 22 inches long and ¼ inch wide was taken from fascia lata and sutured over the weaker upper portions of the flaps under slight tension in a criss-cross manner. No drainage. Incision in thigh closed. Wounds healed in 8 days. Convalescence uneventful. No evidence of a ventral hernia now present. There is no evidence of muscle hernia at site of removal of fascial suture. This patient made a rapid gain in weight after the common duct drainage and the increase in intra-abdominal pressure due to fat undoubtedly predisposed to the ventral post-operative hernia. An effort should be made to avoid taking on fat for 12 months after repair of hernia. A tight abdominal binder is beneficial. When the peritoneum is difficult to close the patient should be placed in the "jack knife" position,—that is the chest elevated and knees flexed. This removes the strain and tension on the structures and decreases the size of the hernial openings 25 to 50 per cent.

True sliding hernia is rare. Only one occurred in this series. Moschowitz says the diagnosis is well nigh impossible, principally due to (1) the rarity of the condition, so that the surgeon hardly ever thinks of its occurrence; (2) the differential points are so trivial that the pre-operative diagnosis cannot be made with any definite degree of certainty. The mere fact that the large intestine is in the sac does not constitute a sliding hernia. No viscus that has a complete peritoneal investment or at least an appreciable mesentery can be the sliding element of a hernia. He further describes a two-fold mechanism as the basis of the sliding hernia, namely, (1) the *pulling* mechanism and (2) the *pushing* mechanism. The viscus and the nutrient vessels slide down from the posterior abdominal wall and carry the parietal peritoneum with them. This is the cause of the extreme difficulty in reducing the hernia and dealing with the sac. The treatment consists in first recognizing the condition, and reducing the prolapsed intestine, which is very difficult. Moschowitz advises opening the peritoneum higher up through an incision made through the internal oblique and transversalis muscle (a McBurney incision) and reducing the hernia by traction upon the intra-peritoneal continuation of the prolapsed intestine. The small sac can then be readily closed. To reduce the larger hernias he recommends a vertical incision at the level of the umbilicus and, after reduction, the post-parietal peritoneum can be sutured to the retro-peritoneal tissues. After reduction the sac is very small, the parietal peritoneum having been reduced. Should I have another case I will try a higher incision and reduction by pulling, rather than by pushing, as advised by Moschowitz.

The following case well illustrates pre-operative treatment, local anaesthesia, and one of the unusual sliding type of hernias: R. J.,

age 57, white, occupation—Master of ship, admitted to hospital April 13, 1925, at 11 A. M. Patient states he had been ruptured 19 months. Thought it was caused by digging a ditch. Hernia was at first reducible but later became non-reducible. Mass has gradually grown larger. Chief complaint was left scrotal mass with occasionally a few stitch pains in left inguinal region. Examination showed a corpulent male adult, weight 235 lbs.; height 70 inches; teeth and tonsils infected; lungs negative; heart enlarged; aortic sounds roughened. Blood pressure 210/135. Abdomen—excessive amount of fat. Large mass extending down into scrotum, non-reducible and does not transilluminate. Operation under general anaesthetic not advised on account of blood pressure and aortitis. X-ray of chest. Diet, rest and dental treatment advised, then operation under local anaesthesia. Wassermann negative in all antigens. Urinalysis negative. X-ray report as follows: The aortic shadow is widened and the heart shadow is greatly enlarged to the left. Apex right lung is heavily mottled. Impression—aneurism, hypertrophy of heart, and T. B. Diagnosis—hernia, inguinal, left, external, complete, scrotal, non-reducible; cardiac hypertrophy, chronic tonsillitis. On May 11, 1925, operated under local, regional and infiltration combined. Patient was prepared as follows: s.s. and g. enema evening before operation and a glass of water every hour from 6 P. M. until midnight. In A. M. enema was repeated; morphine gr. ¼ and atropine gr. 1/150 1 hour and 30 minutes prior to operation, and 300 c.c. 4 per cent magnesium sulphate solution and 3 drams of paraldehyde per rectum. Hour later, morphine gr. ¼ repeated. Two per cent procaine for skin was used and 1 per cent procaine for regional blocking. Anaesthesia was complete and patient had no pain during operation. There was a large mass of omentum in hernia sac and 10 inches of descending colon. The omental mass was excised and 10 inches of descending colon replaced with difficulty. The Trendelenburg position is helpful in these cases and the reduction of 25 pounds in weight and removal of the large mass of omentum facilitates reduction of the sliding hernia. A portion of sac was excised and part sutured over the colon, and hernia repaired. Method of repair —"Andrews' Imbrication;" cord not transplanted. Convalescence uneventful. Tonsillectomy on June 22nd under local, procaine 2 per cent.

On June 9th, blood pressure was 135/90; weight 177. Examination 2 months later showed no evidence of hernia. No history of intestinal disturbance followed. Traction through a small McBurney incision as advised by Moschowitz would have greatly facilitated reduction of colon. It was only by catching colon high up with long intestinal clamps that colon could be reduced and then not satisfactorily. The next time I will try Moschowitz's method of pulling the sliding viscus, not pushing it, as I belive his principle to be correct.

Saddle-Bag Hernias.—Coley states that saddle bag or direct and indirect hernia should be considered and treated as a variety of direct hernia. Removal of both sacs is essential: in Coley's series of 280 cases of direct hernias in male adults, 85 of which have been followed, recurrence developed in 14 (16.4 per cent). For this variety of hernia the "living suture" repair of Gallie is of great value and may become the suture of choice.

"The type of operation to be performed should be determined by the tissues available for repair. The use of a standardized technique for all cases should be deprecated."

Four of my recurrent hernias in two patients were in double saddle-bag hernias. In the first case I did not find the direct sac at operation. The second case, a T. B., was done under local and his hernia recurred as a bulging through the internal rings, either due to faulty healing or defective closure or repair.

Compensable hernias should be considered, as 71 of this series were compensable and cost us approximately $14,638.00 or more. Mock advocates the term compensable hernia to include all cases of true traumatc hernia and all cases of "accidental hernia" in which the force causing their development is directly the result of some unnatural occupation hazard.

The French writers divide them into 3 groups: (1) true traumatic hernia, which is due to direct violence; (2) hernia of weakness, which is the result of a deficiency or malformation in the development of the structures in the hernial regions; (3) occupational hernia (hernia of effort) which is due to sudden increase in intra-abdominal tension. These constitute about 99 per cent of all hernias that come before State industrial commissisons.

(1) True traumatic and (2) accidental or sudden hernia appear to be the better classification.

Germany (1884) was the first country to pass a workman's compensation act. The German courts have held that traumatic hernia is subject to the following conditions:

1. The relationship between the accident and the hernia must be proved by an examination within 48 hours.

2. It must be proved that the hernia appeared suddenly.

3. It must appear immediately after the accident and be accompanied by pain.

4. Proof must be furnished that the hernia did not exist prior to the accident.

The Swiss courts define the following rules for compensable hernias:

1. The hernia must appear suddenly.

2. It must be of recent origin.

3. It must be accompanied by pain.

4. It must immediately follow an accident.

5. It must be proved that hernia did not exist prior to accident.

The French courts have ruled that traumatic and accidental hernias are compensable but the hernias of weakness are not.

The following is quoted from U. S. Public Health Service Regulations, 1920. Hernia cases entitled to treatment under Compensation Act:

The following rules as to compensation in cases of hernia are intended to serve as a guide and can not be considered as binding in all hernia cases:

1. Predisposition to hernia shall be regarded as immaterial.

2. Any new hernia, whether complete or incomplete, resulting from an injury, if causing incapacity for work, shall entitle the injured employee to operation and compensation during the resulting incapacity, but the evidence must show with reasonable clearness that:

(a) The alleged hernia was immediately preceded by some sudden effort, severe strain, or the application of external force.

(b) The injury was accompanied or immediately followed by pain and discomfort.

(c) The claimant had no knowledge of the existence of the hernia prior to the alleged injury.

3. Any existing hernia which has not incapacitated for work, if materially aggravated as result of an injury, is compensable if causing incapacity for work, or if not causing incapacity for work, shall entitle the injured employee to operation and compensation during the resulting incapacity, but the evidence must show with reasonable clearness that:

(a) The alleged hernia was immediately preceded by some sudden effort, severe strain, or the application of external force.

(b) The injury was accompanied or immediately followed by pain and discomfort.

(c) There was a material aggravation of the condition of the hernia existing prior to the alleged injury.

4. In all cases of hernia which the commission shall find remediable by operation, the claimant shall be awarded such operation as a proper and necessary part of medical, surgical, and hospital treatment. If he refuses either to accept or to secure operative treatment, he shall be denied further compensation and treatment, unless there are particular circumstances warranting the waiving of this rule.

The operating surgeon's opinion as to conditions found at operation should be considered. A large hernia with a thick sac and adhesions would indicate a hernia of long standing. C. H. Mayo says that heavy fibrous bands found in the sac is positive proof of a long standing condition. Proof that the hernia did not exist previously to an alleged injury; previous records of examination should be consulted; life insurance examinations could be used; a definite history of accident, a small hernia; and a small thin peritoneal sac, readily freed from the cord and vessels, would indicate a recent hernia.

Y. S., seaman, white, age 23, admitted October 17, 1923, at 4 P. M. Patient states he has a mass that has never been in right side as far as he could remember. On October 12th, while at work on S. S. S. L. Messick as a fireman, he fell when trying to get the slack out of a rope, injuring his right side, which became swollen and tender immediately.

Examination negative except a mass the size of quart cup in left scrotum extending up cord and into groin. Mass was about consistency of omentum or gut. No peristalsis heard. Operated 6:30 same evening. A large hematoma of right scrotum and cord and an indirect hernia was found at operation. It was thought that the hernia occurred at same time hematoma was produced. If no hernia existed prior to alleged injury, this can be well considered

a traumatic hernia. An examination prior to employment would have settled this point. The history—pain, hemorrhage and sudden appearance of this mass—certainly points to a traumatic hernia, and the presence of recent hemorrhage, lacerations or discolorations would certainly class it as a compensable hernia.

The importance of examining all patients for hernia as part of our routine examination and note made if a hernia is present or not cannot be overestimated, as the patient may later claim compensation for a hernia and any previous examination, if consulted, might save the employee an injustice, or *vice versa*, the employer.

That large external rings are considered evidence of a predisposition to hernia, is doubtful, but a large ring does favor a more thorough examination of the canal and rings. If a bulging is present it can be more readily detected. Colcord examined 9,000 men and found 784 cases of open rings, 8.7 per cent. Twenty-four cases of hernia developed in this group and only 3 occurred among those recorded with open rings, and he states that only 3 of the 784 cases with open rings later developed hernias. Mock, in 160 operations, recorded only 1 case showing a large external inguinal ring.

A large internal ring practically means a hernia, and a bulging between the rings is indicative of a direct hernia.

McCullough, in a recent article, states that in 8,000 men examined, 902 had one or both, patulous rings, 11-27 per cent. Of 79 admitted for hernia later, 25 per cent had signed releases for patulous rings. He further states, of 79 operated, 4 recurred, and 2 were direct hernias.

The question of potential hernias is frequently raised in examining compensation cases. The presence of empty congenital sacs in adults is more common than is generally supposed. Many people carry these potential hernia sacs throughout lift without evidence of hernia. Murray, in postmortem examinations of 100 subjects, found 21 sacs. In another series of 200 examinations, Raw and Murray found 68 peritoneal diverticular, 52 femoral, 13 inguinal, and 3 umbilical.

Watson states, in 50 operations for unilateral hernia, a potential sac was found in 22 cases. For this reason repair of the opposite side is frequently advisable.

Pneumoperitoneum would be beneficial in these cases to show presence of a sac and the contents and demonstrate potency of the processus vaginalis, and when a hernia cannot be diagnosed clinically, although a so-called potential hernia exists and the question of compensation is to be settled, pneumoperitoneum and X-ray may be of help.

The treatment of hernias is surgical. Children cured with a truss are prone to hernia later in life. Cures with a truss in adults are rare.

After operation we try to return our patients to duty, if their work is not too strenuous, in 6 weeks, but advise them to do no straining or lifting for 6 months.

A recurrence may be prevented by removing all fat or lipomas from the canal and cord to reduce the size of the cord. It is estimated that lipomas are present in more than 47 per cent of the cases.

The important question, will muscle unite with fascia, has often been discussed. Seelig, M. G., and Chouke, K. S., made an experimental study on the fascia lata and muscle of the thigh of dogs. Briefly their reports were:

1. In every instance of clean wound healing the fascia was widely separated from the muscle to which it had been sutured. In wounds that healed by primary union the muscle and fascia would not establish a close union.

2. In the infected wounds there was neither direct union of muscle and fascia nor even continuous indirect union by a solid uninterrupted layer of cicatricial tissue.

3. Muscle traumatized by excision of a wedge and the fascia sutured in the raw trough, there was an attempt at direct union between muscle and fascia. This union was complete in only one instance.

Applying their observations to the usual technique for hernia operation, the authors came to the following conclusions:

(1) Normal muscle will not unite firmly with fascia or ligaments. It is, therefore, a useless procedure to suture the abdominal muscle to Poupart's ligament in the hope of buttressing a weak or ruptured abdominal wall.

(2) Fascia unites well with fascia.

(3) The weak abdominal wall should be

strengthened by a method to secure fascia to fascia approximation.

I believe that any operation that carries with it the principles of (1) a high ligation of sac; (2) removal of fat from the canal; and (3) imbrication of white fascia, is the operation of choice.

REFERENCES.

Hernias: Watson.
Keith, Sir A.: *British Journal Surgery*, 1924, XI-455.
Industrial Medicine and Surgery: Mack.
Seelig, M. G., and Chouke, K. S.
Arch Surg.: 1923, VII-553.
Coley, B. L.: *Am. Surgery*, 1924, LXXX-242.
R. E. Farr: *Jour. Amer. Med. Assn.*, May 31, 1924.
The Combined Right Inguinal Hernias and Appendix Operation: Harry Coken, *Med. Journal and Rec.*, Mar. 18, 1925.
The Rational Treatment of Sliding Hernias.: Alexis Moschowitz, Vol. LXXXI, 1925, *Annals of Surgery.*
Practical Medical Series, 1925: Ochsner.
Ochsner: Surgical Diagnosis and Treatment.
Industrial Hernia: Kenneth McCullough.
Jour. Med. Assn. of Georgia: Feb., 1925, Vol. XIV.

FALL HAY-FEVER IN THE DISTRICT OF COLUMBIA AND VICINITY.

By GRAFTON TYLER BROWN, B. S., M. D., Washington, D. C.
Member of the American Association for the Study of Allergy; Lecturer on Allergy, Georgetown University and George Washington University Schools of Medicine.

Autumnal or Fall hay-fever is a typical seasonal form of hay-fever, occurring in the District of Columbia and vicinity between the middle of August and frost. This time corresponds to the period of pollination of ragweed, which is the cause of practically all of these cases. There are two varieties of ragweed, namely, the dwarf or short ragweed, and the giant or tall ragweed. Giant ragweed pollinates from about August 10th until September 15th to 20th, whereas short ragweed pollinates from about August 17th to 19th until frost, which usually occurs the first part of October.

Ragweed is a dirty green weed that grows abundantly on vacant lots, along roadsides, river banks, etc. It thrives best in soil that has been cultivated and then not used for a time, such as an abandoned corn-field, or an old garden plot.

Giant ragweed, also spoken of as horse weed, grows best in moist soil and ranges in height from 5 or 6 feet to even 10 or 12 feet under favorable conditions. The leaves of this variety are distinctive in that they are definitely three lobed, hence the botanical term *ambrosia trifida.*

Short ragweed varies from a few inches to 3 to 5 feet in height. The leaves branch and rebranch, resembling those of wormwood or artemisia; this form of ragweed is therefore known as *ambrosia artemisiafolia.*

Pollen is the male fertilizing element through the medium of which the propagation of plants occurs. There are two types of plants, namely, wind pollinated and insect pollinated. Only those that are wind pollinated are of importance from the hay-fever viewpoint. Some typical examples of insect pollinated plants that bloom in the Fall are goldenrod, dahlia, aster, sunflower and golden-

glow, whereas the ragweeds are wind pollinated. Insect pollinated plants can be readily distinguished by their brightly colored flowers, sweet odor and the presence of nectar glands. These are Nature's invitations to bugs, bees, and butterflies to come get the pollen, and in going from flower to flower they distribute it to other plants of the same species. This type of plant produces a comparatively small

amount of pollen, the grains of which are large, heavy, and sticky, and readily cling to the body and legs of insects.

On the other hand, wind pollinated plants, such as ragweed, have dull, insignificant flowers, and are lacking in sweet odors and nectar glands. Their pollen grains are small, light, buoyant, and are produced in great abundance, and carried by the wind for miles under favorable conditions.

Goldenrod has been erroneously held to be the cause of Fall hay-fever, but as previously stated this plant is insect pollinated, and therefore can only cause symptoms on intimate exposure in very sensitive patients. In other words, the only pollens that commonly produce hay-fever symptoms of any duration are those that are floating around in the air, and can be breathed in with normal respiration. People developing sneezing and running of the nose and eyes on going through the fields in the Fall of the year would see the bright yellow goldenrod and naturally assume that to be the cause of their trouble, completely ignoring the dull, insignificant ragweed which is the true offender. Patients frequently report that smelling goldenrod causes them to sneeze, but this is almost always due to ragweed pollen clinging to the goldenrod, and not to the goldenrod pollen itself.

It has been estimated that between one and two per cent of the population of the United States suffer from hay-fever in some form. In other words, there are one or two million sneezers in this country. Hay-fever may be perennial (all year round) or seasonal in type. There are three types of seasonal hay-fever in the District of Columbia and vicinity: Spring, due to tree pollens; Summer, due to grass and plantain pollens; and the Fall variety, which is by far the most common, due to ragweed pollen. The fall type as a rule is of longer duration and greater severity than either Spring or Summer hay-fever. Perennial hay-fever may be due to any one of a number of causes, namely, sensitization to food; animal epidermis (hair, dandruff, feathers or wool); bacteria; orris root in face, talcum or tooth powders, sachets or dry shampoos; house dust; deficiency of lime in the blood; etc. By sensitization is meant a condition of undue susceptibility to some substance which would be harmless to normal individuals. It has been estimated that approximately ten per cent of the people are sensitive to some foreign substance.

The symptoms of hay-fever are so well known that I need scarcely describe them. Briefly, they are as follows: Itching, burning, redness and watering of the eyes; irritation, sneezing, and running of the nose, alternating at times with complete stoppage of the nostrils due to swelling of the mucous membrane; itching deep in the ears and way back in the roof of the mouth: accompanied by a feeling of fullness in the head and general prostration. Very frequently an irritating cough sets in toward the end of the hay-fever season, and in some cases lasts well into the winter. Somewhere between one-third and two-thirds of all hay-fever victims develop asthma at some time in the course of the disease, which, when present, is by far the most distressing symptom. Asthma consists of marked difficulty in breathing accompanied by a wheezing sound in the chest.

The diagnosis of Fall hay-fever is made partly by the history of the case, which runs somewhat as follows: Symptoms of hay-fever occurring annually between mid-August and frost, which symptoms are worse on dry, sunny, dusty days, than they are on damp, wet, rainy days (rain tending to wash the pollen from the air). Aggravation of symptoms by proximity to weeds, likewise worse in the country than in the city. Worse in the early morning hours, due to the greater amount of pollen in the air at this time. Comparative freedom at the seashore except when there is a land breeze. Complete freedom in northern Canada and Europe where there is no ragweed. Definite aggravation of symptoms from an automobile ride or a train trip through the country at this time of the year.

The diagnosis of true autumnal hay-fever, suspected from the history, is confirmed by means of skin tests, which are made as follows: Minute scratches about one-eighth of an inch long and not deep enough to draw blood, are made on the cleansed inner surface of the arm. On each of these scratches is placed a drop of the different pollen extracts to be tested. These skin tests are practically painless, and disappear entirely in a few days, leaving no mark. A positive reaction appears about the site of the test in from 5 to 15 minutes, and consists of a welt with an irregular outline, surrounded by an area of redness,

and accompanied by a sensation of itching, resembling a hive or mosquito bite. These welts vary in size from one-fourth inch to two inches in diameter. A positive reaction to the pollen extract of any plant means that the patient is sensitive to that particular pollen, and that sufficient exposure to the same will cause hay-fever. On the other hand, a negative reaction means that the patient is not sensitive to that particular pollen and therefore cannot have hay-fever from this source. Patients are tested with pollen extracts of all of the wind pollinated plants in the vicinity of their residence or place of business, and also with any

of the insect pollinated plants that they are intimately exposed to. However, in most of the cases of Fall hay-fever in the District of Columbia and vicinity, it is only necessary to test with short and giant ragweed. An occasional patient will react to short ragweed and not to giant, and very rarely one will be found to react to giant and not to short, but the common run of Fall hay-fever victims react to both varieties. Patients sensitive to ragweed will frequently react to other members of the same botanical family, such as dahlia, sunflower, goldenrod, etc. These are known as group reactions, and are due to similarity in the structure of the pollen grains.

Patients sensitive to only one type of ragweed are treated with that particular variety, whereas patients reacting to both are treated with a mixture of the two. There are two kinds of treatment, pre-seasonal or preventive, and co-seasonal or treatment given during season. Treatment consists of a series of gradually increasing doses of sterile pollen extract injected just beneath the skin of the upper arm. These injections are given from a day to a week apart, and vary in number with the individual patient. The inoculations do not hurt nor do they make the patient sick, the only reaction being a local one, consisting of redness, swelling and itching about the site of the injection.

Where the diagnosis is correctly made and the treatment properly administered, the results are almost always successful, namely, complete or practically complete relief from hay-fever, regardless of the age of the patient, or the duration or severity of the disease.

1801 *Eye Street, Northwest.*

INTRAVENOUS MERCUROCHROME 220.
Report of a Case.*

By WILBUR M. BOWMAN, M. D., Petersburg, Va.

Since reporting a series of cases in the Virginia Medical Monthly for November, 1925, the writer had the opportunity again to test the merits of mercurochrome therapy in the following case which is reported in detail from the hospital chart, for obvious reasons.

Mrs. X, age twenty-seven, multipara, was admitted to the hospital August 18, 1925, with a diagnosis of uterine sapraemia, and discharged October 6, 1925, with a final diagnosis of puerperal septicemia and chronic gonorrhea. Days in the hospital, fifty. About a week before the birth of child (August 8th) it was necessary for patient to go to bed. Prior to admission she suffered with severe pains in lower abdomen, high temperature, and frequent vomiting. When admitted to the hospital the patient was markedly anemic and in a very serious condition. Examination re-

*For the privilege of reporting this case, the writer is indebted to the attending physician.

vealed slight abdominal distention with tenderness over right iliac fossa. Uterus enlarged and cervix dilated to the size of a silver dollar. Edema of legs, feet, and ankles present. Temperature 102.6, pulse 96, respiration 24.

August 18th.—Operation D. and C. Septic blood clots found.

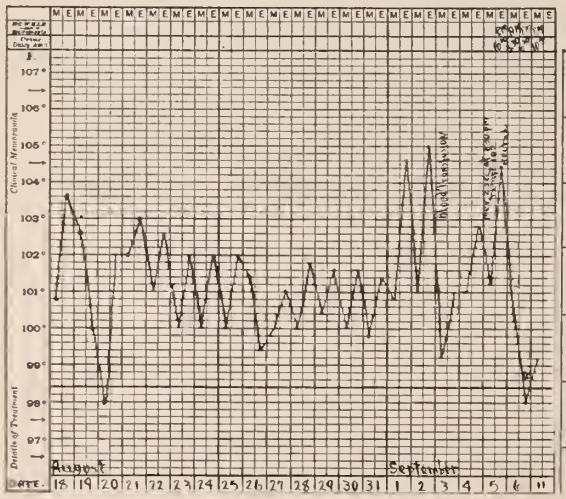
August 22nd.—Up to this date her pulse continued weak and rapid. She was also very cold at times. Stimulants required, as coffee per rectum, salines, and caffein sodium benzoate. Patient vomited frequently and was unable to retain anything on her stomach. Sore all over and suffered with a severe headache. Edema of lower limbs continued.

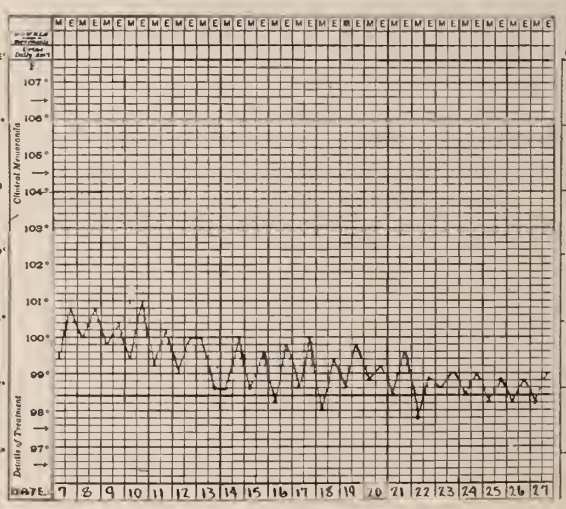
August 20th.—Smears from cervix positive for gonococcus.

August 26th.—From the 22nd to this date, patient was more comfortable. She was able to retain a small amount of nourishment. Edema of limbs lessened.

August 27th.—Patient very weak and complained of soreness in teeth and face.

August 29th.—Repeated smears from cervix positive for gonococcus. Soreness in teeth and gums.





August 30th.—Patient not feeling well. Teeth and gums hurting.

August 31st.—Patient shivering. Nauseated and vomited several times. Condition remains serious.

September 1st.—Patient very weak and chilly.

September 2nd.—Patient chilly and nauseated. Vomited. Blood culture taken. Positive for staphylococcus albus.

September 3rd.—Patient nauseated. Vomited milk. Blood transfusion—700 c.c. No reaction.

September 4th.—Patient somewhat brighter.

September 5th.—Still appears to be better, but chilly at times. At 6:30 P. M., 23 c.c. mercurochrome 1 per cent solution was given intravenously in left arm with great difficulty as veins were very small. At 7:30 P. M., patient nauseated and vomited. At 7:45 P. M., diarrhea began. Nausea continued.

September 6th.—2:00 A. M. Patient quiet. Urine and feces colored with mercurochrome. 6:00 A. M., patient comfortable. Vomited small amount. Diarrhea continued. Paregoric administered.

September 7th.—Diarrhea continued. Paregoric repeated at intervals.

September 8th.—Gums and tongue sore. Vomited occasionally.

September 9th.—In spite of diarrhea, patient feeling better and sleeping soundly. She even had to be awakened for nourishment. For the first time since admission to the hospital, patient really begins to show an absolute improvement.

September 10th.—Still continues to feel better. Diarrhea stopped. A second transfusion was attempted, but on account of such small veins it was abandoned after three incisions were made.

September 11th.—Patient continues to im-

BLOOD

Date	Erythro-cytes	Leuco-cytes	Hemog.	Neutrop.	Lympho.	Eosinop.
8-18-25	.....	14,400	.....	82.5%	17.5%	.....
9- 1-25	2,328,000	20,200	33%	77	23	.....
9- 4-25	3,256,000	5,400	47	76	22	2%
9- 8-25	3,448,000	11,400	52	83	16	1
9-23-25	3,072,000	11,400	53	58	38	4

URINE

Date	Obtained	Specific Gravity	Reaction	Albumen	Sugar	Casts	Red Blood Corpuscles	White Blood Corpuscles
8-18-25	Cath.	1.003	Alk.	Abund.	Neg.	Negative	Rare	Abund.
9- 1-25	Cath.	1.010	Acid	H. T.	Neg.	*Hy. & F. G. rare	Negative	Rare
9- 5-25	Void.	1.010	Alk.	H. T.	Neg.	Hy. very rare	Rare	Rare
9-14-25	Void.	1.010	Acid	Trace	Neg.	Hy. rare	Negative	Rare
9-17-25	Void.	1.006	S. Alk.	Abund.	Neg.	Negative	Negative	Very rare

*Hyaline and Finely Granular.

prove in every respect. Appetite good. Sleeps all night.

September 12th.—Patient up in chair.

September 17th.—Mouth somewhat sore. House diet.

October 6th.—Patient discharged.

Comment

Skeptics will no doubt say again that this is another case of recovery by coincidence but, be that as it may, the patient recovered and it looks as though mercurochrome therapy played the greater part towards that end. Again it was used as a last resort and the favorable turning point in the patient's condition was realized. It is to demonstrate more clearly this point that this case was reported in detail. From an experimental as well as a therapeutic standpoint, it was rather fortunate that the second transfusion was unsuccessful as it would have been questionable as to the real value of mercurochrome in this case.

In the treatment of septicemic conditions especially, the physician need not feel that his hands are tied if he will but employ the use of mercurochrome therapy in the proper way.

109 *North Union Street.*

DETERMINATION OF PHORIAS BY PROLONGED MONOCULAR OCCLUSION.*

By CHARLES A. YOUNG, M. D., Roanoke, Va.

Prolonged monocular occlusion is not a new procedure, having been described by Dr. F. W. Marlowe* several years ago, and Dr. Walter B. Lancaster, in discussing Dr. C. S. O'Brien's† paper, stated that he had been using this test for twenty-five years or more.

Theoretically, binocular vision not being required, the eyes will seek a position of anatomic rest, which can be accurately measured by the various muscle tests, but, practically, this is not attained nor desired, at least if the divergence of the eyes under a general anesthetic can be considered the position of anatomic rest. Undoubtedly the fusion faculty is temporarily inactive, which permits the eyes to relax, but that the balance as found following the occlusion test is an accurate guide is very doubtful as many of the patients will not accept corrections clearly indicated by the occlusion test; nevertheless, this test is worthy of our most serious consideration.

The reason we do not obtain more uniform results from the occlusion test is that many of the cases of heterophoria are secondary to infection of the adjacent sinuses, infected tonsils, toxemia, or other debilitating conditions which indirectly affect the muscles of the eyes, the nerves supplying the muscles, or the higher centers.

Indications

Patients showing one or more degrees of hyperphoria that are not relieved by wearing prisms correcting one-half to two-thirds of the manifest hyperphoria. Patients showing slight or varying degrees of imbalance who after careful refraction still complain of asthenopia.

*Read before the Virginia Society of Oto-Laryngology and Ophthalmology, in Petersburg, April 27, 1926.

Method Used

An eye patch is prescribed to be worn over one eye continuously for a period varying from four to forty-eight hours. When the patient returns to the office he is seated at the trial case in a darkened room and the trial frame with a Maddox rod over one eye is put in position, the patient is instructed to keep his eyes closed throughout the examination except while observing the relative position of the line to the light; after removing the patch the muscle balance is obtained in the usual manner.

It is important to have the patient keep his eyes closed or his eyes covered between observations of the line and light, in order to prevent as far as possible a desire for binocular vision.

Analysis of Twenty Cases

Exophoria was present in fifteen of the twenty cases; following monocular occlusion, there was an average increase of the exophoria of 128 per cent for distance, and an average increase of 40 per cent for near.

Esophoria was present in five of the twenty cases; following monocular occlusion, there was an average decrease of the esophoria of 30 per cent for distance, and an average decrease of 20 per cent for near.

Hyperphoria was increased in eleven of the twenty cases, showing an average increase of the hyperphoria of 128 per cent.

Hyperphoria was decreased in three of the twenty cases, showing an average decrease of the hyperphoria of 71 per cent.

Hyperphoria was unchanged in six of the twenty cases.

Of the eleven patients showing an increase in the amount of hyperphoria, eight of them (73 per cent) were made comfortable with prisms, while three of them (27 per cent) either obtained no relief or were more uncomfortable with prisms prescribed in accordance with the findings by the occlusion test.

The average length of time one eye was occluded in this series was twenty-five hours, the shortest period was four hours, and longest period forty-eight hours.

Dr. F. W. Marlowe recommends occluding one eye for one week, while Dr. C. S. O'Brien reports very favorable results following monocular occlusion for periods of from two to three hours.

Case With Favorable Results

Mrs. J. B. N., 33 years of age, complained of frequent headaches, pain in back of head and neck, also a tendency to hold her head to one side when reading and sewing.

Examination negative except muscle imbalance which showed at the first visit:

Distance—Right hyperphoria 1¼ degrees; exophoria 2 degrees.

Near—Right hyperphoria 1 degree; exophoria 10 degrees.

Following occlusion of one eye for twenty-four hours, muscle balance was:

Distance—Right hyperphoria 4 degrees; exophoria 4 degrees.

Near—Right hyperphoria 4 degrees; exophoria 12 degrees.

Temporary glasses were prescribed with a one degree prism, base down, over right eye, and a one degree prism, base up, over left eye; as the temporary glasses relieved all of her symptoms, the prisms were prescribed incorporated in the post-cycloplegic findings:

O.D.+25+25, axis 90 degrees with 1 degree prism, base down.

O.S.+25 cyl., axis 90 degrees with 1 degree prism, base up.

When last seen patient was very comfortable, having no headaches, no pain in the back of neck, and with no tendency to hold head to one side.

Case With Unfavorable Results

Mr. H. G. L., 49 years of age, complained of headaches and difficulty with close work.

Examination negative except error of refraction and muscle imbalance which showed at the first visit:

Distance—Left hyperphoria 2 degrees; exophoria ½ degree.

Near—Left hyperphoria 2 degrees; exophoria 6 degrees.

Following occlusion of one eye for 36 hours, muscle balance showed:

Distance—Left hyperphoria 2½ degrees; exophoria ¾ degree.

Near—Left hyperphoria 2½ degrees; exophoria 6 degrees.

Prisms, ¾ of 1 degree, base up, over the right eye, and the same amount, base down, over the left eye prescribed, to be worn over his old glasses which corrected his distance vision but the reading segment needing an increase of plus fifty sphere in each eye.

After wearing the prisms for two weeks the patient returned complaining that the prisms increased his headache and discomfort.

Prescribed ultex bifocals:

O.D. +75 +25, axis 5°
O.S. +50 +75, axis 180°
add + 187 O. U.

which corrected his distance and near errors of refraction; feeling that prisms should be worn, I had him wear the prisms over his new glasses, which again gave him headaches. Had the patient wear his new glasses without the prisms, and since then he has been comfortable except for periodic headaches which he has had for many years. The patient still shows two degrees of left hyperphoria for both distance and near, yet he will not tolerate prisms.

Conclusions

The test does not seem to be of much value in the cases of exophoria and esophoria. Excellent results were obtained in about 40 per cent of the cases of hyperphoria.

Prolonged monocular occlusions is the only test at our command whereby we can determine the presence or absence of latent phorias and one which will be found a most useful procedure in obscure cases of asthenopia, and it marks a very definite advance in the diagnosis and treatment of heterophoria.

References.

*Marlowe, F. W.: Influence of Prolonged Monocular Occlusion in Revealing Errors of the Muscle Balance. *Brit. Journal Ophthal.*, v. 4, pp. 145-155.

†O'Brien, C. S.: Ocular Muscle Balance Following Prolonged Monocular Occlusion. *Jour. A. M. A.*, v. 85, No. 17, pp. 1295-1298.

612 *MacBain Building.*

MILIARY TUBERCULOSIS OF THE CHOROID.*

By JAMES N. GREEAR, Jr., M. D., Washington, D. C.

Manz, of Berlin, was the first to recognize that the nodules found in the choroid in acute miliary tuberculosis were of the same nature as those found in other organs of the body. His first case was published in 1857 and five years later he published two others. Another case was reported by Busch in 1866. The following year Cohnheim reported a series of seven cases on which autopsies had been performed and in each of which the characteristic nodules had been found. This was the first time that attention was called to probable diagnostic value of ophthalmoscopic examination in suspected cases of a miliary tuberculosis.

Both Graefe and Leber found with the ophthalmoscope appearances according with those described by Cohnheim and post-mortem examinations confirmed the diagnosis.

Gowers, in his work on medical ophthalmoscopy, states that practically choroidal tubercle is confined to cases where tubercles are widely distributed and that choroidal tubercle is more common in cases of tuberculosis without meningitis than with it. DeWecker, in his work in ocular therapeutics, recognizes that choroidal tubercle is a sign of tuberculosis rather than meningitis.

Heinzel never saw tubercles in the choroid in forty-one cases of tubercular meningitis which he examined with the ophthalmoscope; and the case found in Gowers' work was the sole instance in which they were found in twenty-six cases examined by Dr. Garlick, of London. Morton in 1892 reported a case of general tuberculosis with meningitis with a choroidal tubercle which had burst through the retina. Ophthalmoscopic examination revealed a large ring of dark pigment surrounding the tuberculous mass. He emphasized the fact that there are cases of tubercles in the choroid in which there is a pigment ring surrounding the area after resorption, just as in other types of choroidal atrophy.

Cohnheim concluded from his findings that tubercles in the choroid must be a constant or nearly constant occurrence in patients with miliary tuberculosis. Litten, however, found tubercles present in 75 per cent of 52 cases examined.

While the early ophthalmologists believed that ophthalmoscopic changes in the choroid were rare in tubucular meningitis, Carpenter and Stephenson claimed to have found tubercles in the choroid in 50 per cent of their cases.

Marple, in the Baby's Hospital, New York, concluded that in tubercular meningitis choroidal miliary tubercles are the rule, reporting 100 per cent in 13 cases. He emphasized the importance of frequent examination and mentioned a case in which an ophthalmoscopic examination made at 6 P. M. disclosed the fundi entirely free of tubercles and at 10 P. M. a tubercle was found, having developed in the interval.

In tubercular meningitis we are dealing with a comparatively localized infection, and if tu-

*Read before the section on Ophthalmology and Oto-Laryngology of the Medical Society of the District of Columbia, February 19, 1926.

bercles do appear in the choroid in the course of this disease, then it would seem that we are no longer dealing with a localized meningitis but with the addition of a general miliary tuberculosis. Marple did not mention whether post-mortem examinations were made in any of the thirteen cases he reported, and I believe this is an important differential point which can be cleared up only by careful post-mortem examinations. Holt states that at autopsy pulmonary lesions are almost invariably found and miliary tubercles are usually present in many other organs. This indicates that the meningitis in infants is a part of a generalized infection and causes death before the other evidences of the disease are usually manifest.

The diagnostic value of ophthalmoscopic examination in obscure febrile conditions cannot be more strongly emphasized than in Stephenson's report of three cases of acute tuberculosis which were diagnosed as such by the discovery of tubercles in the choroid. In one, the diagnosis was made from an apical pneumonia, a second from pneumococcal peritonitis, and in a third from typhoid fever.

During the past two years I have made ophthalmoscopic examinations of 12 cases of tuberculous meningitis at the Children's Hospital in this city, and the case I wish to report this evening is the only one in which choroidal tubercles were found. The examinations were repeated in the other cases, but not as frequently as Marple suggested.

Case Report

Joseph P., colored male, age 21 months. Admitted to Children's Hospital on January 14, 1925, with the following history:

Family History.—Mother, father and one brother living and well. Patient born at full term. Normal labor and weighed 10½ pounds. No family history of tuberculosis and no contact.

Previous History.—Talked at 11 months, dentition at 9 months. Has occasional cold. Breast fed. Eats and sleeps well. Bowels regular. Five months ago patient had a Mayo operation for umbical hernia, with an uneventful recovery, although the hernia has recurred.

Present Illness.—Mother says she noticed that the child was "drawn about the head" about three weeks ago. Has had a slight cough for about two weeks. Bowels normal. Has had no apparent pain, but appears to be more sleepy than normally.

Physical Examination.—A fairly well-nourished colored male child, lying in bed with head slightly retracted. Hands somewhat tremulous. Head, size and shape normal; pupils react sluggishly to light; extra-ocular movements normal; ears normal. Pharynx red and injected. Tonsils slightly enlarged. Tongue coated, neck rigid and painful. *Chest.*—Lungs clear; heart negative. Abdomen shows scar of operation for umbilical hernia. Extremities normal. *Reflexes.*—Knee jerk, and legs very active but no definite signs. *Temperature.*—102.6 F. Pulse 150, Resp. 45.

Provisional Diagnosis.—Tuberculous meningitis.

Spinal puncture was done on admission. Fluid was found under considerable pressure and 35 c.c. of straw colored fluid was withdrawn. The cell count was 750 per c.m.m., with 66 per cent pmns., and 34 per cent lymph.

The day following admission the child looked very sick. Hands showed marked tremor in voluntary motion. Expression anxious and fearful. Marked rigidity of posterior neck muscles. No ptosis, squint or evidence of paralysis of any of cranial nerves.

Moderate cervical, axillary, and inguinal gland enlargement. Abdominal reflexes present. Von Pirquet cutaneous test positive at 17 hours.

Spinal punctures were performed daily, which showed a cell count from 200 to 800 per c.m.m., with a relatively high percentage of lymphocytes, being as high as 49 per cent at one time. The fluid remained turbid. Fehling's solution was slightly reduced.

There was an increase in globulin. At no time were tubercle bacilli found.

Examination of blood:—

W. B. C. per c.m.m. 13,300

Differential:—

Lymphocytes (small)	50%
Pmns.	45%
Large mononuclears	2%
Tans	3%

Urinalysis.—Shows trace of albumin; otherwise negative.

X-ray of chest shows infiltration of both lungs, having the appearance of tuberculosis.

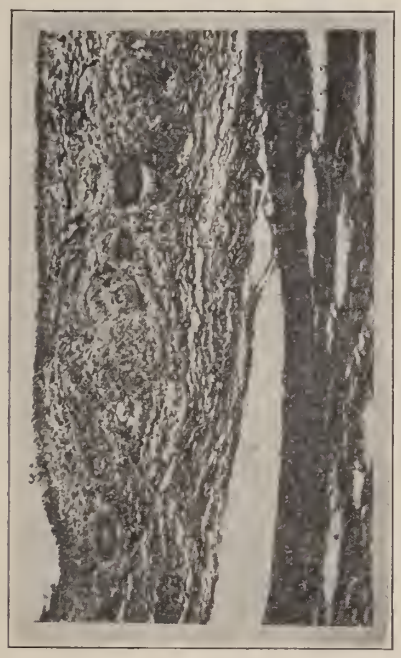
Six days following admission to hospital, an ophthalmoscopic examination was made

with the pupils expanded with homatropin. Pupils dilate equally and well.

Right Eye.—Media clear. Disc margins not clearly defined. Disc very hyperemic. Area of choroidal exudate above the disc and about three disc diameters in width. There is no pigmentation or hemorrhage, but area of exudate appears rather moth-eaten and not elevated.

Left Eye.—Media clear. Disc has same appearance as right eye. There is an area of choroidal exudate in the macular region about two disc diameters wide, which shows some elevation. There is a small superficial hemorrhage in apex of exudation. Surrounding this area is a rather lighter band or halo. There are no other hemorrhages seen.

Directly below the macula and both to the temporal and nasal sides are many slightly elevated round or oval discrete areas of gray-



Section of the choroid showing areas of small round cell in filtration and large multinuclear cells with homogeneous structureless cytoplasm.

ish infiltration. These lie beneath the retina, which can be demonstrated in some instances where the retinal vessels pass over the nodules. There is no inflammatory reaction or pigmentation in or around these areas, which vary in size from minute dots to 1/3 the diameter of the disc.

Diagnosis.—Miliary tubercles of the choroid with mild optic neuritis.

The child's condition gradually grew worse and he died on January 27, 1925. The condition in the fundus oculi did not show any marked change from the time first seen except that there was an increase in the number and size of discrete areas of infiltration in the left eye. Unfortunately, we were unable to get the entire eye for microscopic study. However, the posterior pole of the left eye was obtained and showed numerous miliary tubercles on sections which were confined entirely to the choroid.

Pathological Report.—Sections of the choroid show several areas of small round cell infiltration just below the pigmented layer. There are in addition a number of large multinuclear cells with an homogeneous, structureless cytoplasm, which appear to be typical Langhans-Schuppel giant cells. The retina appears to be separated from its normal choroidal attachment.

Diagnosis.—Tuberculosis of the choroid.

Conclusion.—1. Although tubercles do appear in the choroid in acute miliary tuberculosis, it is not the usual experience of ophthalmologists to find them in a high percentage of patients with tubercular meningitis. 2. The ophthalmoscopic appearance of tubercles in the choroid is very characteristic and the knowledge of their presence may be of great value in making a diagnosis in obscure febrile conditions.

References

1. Manz, W.: *Arch. f. ophth.*, Berlin, 4, 120-126, 2 abth, 1858.
2. Heinzel: *Fahrbuch fur Kinder-heilkinds*, 1875, p. 334.
3. Morton, C. A.: "A Group of Cases of Tuberculosis of the Choroid, Presenting Some Unusual Features." *Brit. M. J.*, Lond., 1, 1190, 1892.
4. Carpenter, G., and Stephenson, S.: "Tuberculosis of the Choroid," *Brit. J. Child., Dis.*, Lond., 3, 249-265, 1906.
5. Marple, W. B.: "Tubercle of the Choroid in Tuberculous Meningitis," *Ophthalmoscope*, 10, 559-563, 1912.
6. Holt, L. E.: *Am. J. Dis. of Child*, Vol. 1, 1911.

1740 *M Street.*

Forget the slanders you have heard
Forget the hasty, unkind word
Forget the quarrel and the cause
Forget the whole affair because
Forgetting is the only way.
Forget the trials you have had
Forget the weather if it's bad
Forget the knocker—he's a freak
Forget him seven days a week
Forgetting surely brings big pay.

—*Selected.*

REPORT OF TWO CASES OF EPIDEMIC ENCEPHALITIS.*

By H. T. HAWKINS, M. D., Clover Va.

This condition, also known as lethargic encephalitis, is diagnosed by exclusion, and the treatment is symptomatic. This is mentioned because the diagnoses were made purely by exclusion in the cases reported. One case occurred in a white woman of advanced age, and the other in a young colored girl, living about five miles apart. There was no possible contact between the two and no other cases preceded or followed them in the locality. Both were sick about the same time.

Case 1. Colored female, 12 years old. First seen early in the morning of April 23, 1925. Her parents became alarmed because they could not arouse her. She was as well as usual up to and including the night just passed. When called in the morning she got out of bed and answered that she was up. A few minutes later her parents, hearing a noise, went up to investigate and said they found her having a spasm, which soon passed off. She roused enough to say that her head and arm hurt, and then lapsed into a deep stupor, not speaking or moving afterwards. It was about two hours after she was taken with the convulsion, when first seen.

The past history is vague. She had always been "kinder puny" and had suffered with her head. No history of previous convulsions could be obtained. The mother is feeble-minded, and none of her relatives could tell any more about her.

Examination revealed a fairly well-nourished colored girl, lying quietly with eyes closed. The heart action was irregular and there was a systolic murmur at the apex. The heart was not enlarged. Mouth cannot be opened. Pupils equal and about normal in size, but will not react to strong light. The knee jerks were absent. There is stiffness of the neck, and attempts to bend the neck caused flexion of the thighs. Temperature 98 axillary and pulse 80.

A soap-suds enema was ordered and cold applications to the head. Quiet and no further attempts to rouse the patient were advised.

Next day the condition was the same. Patient had voided and defecated without rousing since I first saw her. Axillary temperature was 98 and pulse 76. On the fourth day she lay with her eyes open, but apparently did not see or hear anything, or at least gave no intimation that she did either. On the fifth day this girl was lying quietly in bed munching a cracker. Her father stated that she awoke about 4 A. M. Patient said she was comfortable. The knee jerks were present but very sluggish. The stiffness of the neck was still marked and bending the neck still caused flexion of the thighs.

As to treatment in this case, nothing was done except cold applications to the head and alcohol rubs until she regained consciousness. When consciousness had returned she was put on hexamethylenamin in solution. Three days after her return to consciousness she complained of pain in the back of her neck. Mustard plaster gave relief, and she has had no further trouble.

Case 2. White woman, aged 70, married. There was nothing in her past history of importance, except that she had suffered with what she called catarrh for many years. Had typhoid when a young woman, and had never been very robust. First seen April 25, 1925. Complained of violent headache and pain in neck and back. Was nauseated but efforts to vomit produced no results. For several days had a slight cough and some roaring in her left ear. Ate very light supper, which is her custom. A little after midnight she woke with the above symptoms, and at first saw several vivid flashes of light.

Examination at 2:30 A. M. revealed temperature normal and pulse 84. There was accentuation of the aortic second sound. The stomach appeared empty on percussion. There was no tenderness over the mastoid processes, but there was stiffness of the neck. When first seen she was sitting near the foot of the bed, crouched and resting her head on the foot of the bed. Every movement accentuated the pain. A hypodermic of morphine and atropine was given, and for half an hour or more produced no effect whatever. Then she said her pain was not so severe as it had been. By 4 A. M. she was fairly comfortable, dozing for a few minutes and crying out from pain in her head when she made the least movement. Five hours later her condition was unchanged except for profuse sweating. Had been fairly comfortable and had dozed some, but would again cry out from pain in her head on the least

*Read before the South Piedmont Medical Society, at Danville, Va., April 20, 1926.

movement. Temperature, pulse and respiration were all normal.

At noon she was totally unconscious and could not be roused. Temperature was now 100 axillary and pulse 64. Pupils would not react to strong light. There was a spastic condition of the right arm and leg, which passed off in a short while. She would move her limbs on both sides, but the right arm and leg were jerky and stiff. This soon passed off and left her free movement of limbs. Had not voided in twelve hours. Catheterization removed 24 ounces of urine, which, upon examination, showed no abnormality either chemical or microscopic. Patient was still sweating profusely. Ice-cap applied to head and soap-suds enema given, which was effectual.

That afternoon I had Dr. Fuller in consultation. The condition was just as it was at noon. We agreed that there was an inflammatory condition of the nervous system, and decided to await developments before making a further diagnosis. About 8 P. M. the temperature was 100 axillary and pulse 84. Catheter removed 8 ounces of urine. The stiffness of the neck was very pronounced. Patient still comatose. Sodium bromide per rectum every four hours was ordered.

Next day the temperature was 100 axillary and pulse 84. Bladder still not functioning and catheter was used. There has been no defecation and no sounds of peristalsis could be made out with stethoscope. Patient cannot be aroused, but mumbles confusedly about pain. Late in the afternoon she aroused enough to reply in a dazed and confused manner when spoken to, and bladder emptied spontaneously when she was raised to a sitting posture.

For the next week the temperature ranged from 99 to 101 and the pulse from 70 to 80. The patient would seem rational for a few moments and then lapse into delirium. Peristalsis returned after about thirty-six hours. She was put on hexamethylenamin in solution and the bromides continued. There was marked dimness of vision.

During the next two weeks she appeared alternately somnolent and excited. The stiffness of the neck continued and she complained of headache and pain in her neck and between her shoulders. After the temperature was normal for a week, she was put on general diet, and given tincture nux vomica. The appetite was very fitful. Bromides were used only when she became too much excited. Dimness of vision cleared very slowly.

At the end of the second week she was allowed out of bed and began to gain strength slowly but steadily. At the end of the fourth week she was helped into her chair one morning and remarked that she was glad to be home again. Questioning then brought out the fact that the four weeks were a total blank to her. She remembered my first visit and the return home as she thought, but has never been able to recall a single incident between those days.

From that time on her recovery was steady though the stiffness and pain in the neck continued, and she complained of the top of her head feeling sore. The only treatment used was the hexamethylenamin and bromides, with alcohol rubs and the ice-cap and the nux vomica added later. By June 1 she had recovered sufficiently to attend to her household duties and since has been about as well as ever.

THE INTRACAPSULAR METHOD OF CATARACT EXTRACTION—WITH REPORT OF CASES

By WILLIAM PATTERSON, M. D., Richmond, Va.

The advantages of the intracapsular operation for cataract extraction cannot be better expressed than in the following words of Fuchs: "The ideal cataract operation would be to remove the lens in the closed capsule, so that no residue of cataract would remain, no tags of the capsule could be incarcerated in the wound and no after cataract could form by thickening and folding of the capsule that has been left behind. But," he adds, "the ideal results obtaining in successful cases of this method are purchased at the expense of quite a large number of losses."

Colonel Smith, however, in operating in India on over 40,000 cases by this method, with brilliant success, has proved that it can be done with as much safety, in skilful hands, as the capsular operation.

It is claimed by some of the opponents of this method that there is more danger of losing vitreous during the operation. This may be true, but there is also a loss of vitreous in a great many cases of the capsular operation with a much greater danger of losing the eye caused by the capsule and lens substance which are left in the eye.

With the closed capsule extraction at our disposal, there is no excuse of causing a patient with double immature cataract to spend months and sometimes years of idleness and mental anguish by telling him that we cannot operate until the cataract matures.

For the above and other reasons, this method has come to stay, and, in the opinion of Colonel Smith, will come to be the operation, the world over, twenty years hence.

The technic that we employ is as follows:

We do not use a speculum at any stage of the operation. The assistant, upon whose skill depends a great deal of the success of the operation, holds the lids apart with his fingers. With a pair of toothed forceps, the conjunctiva is grasped in the vertical meridian, at the lower limbus, pulling gently forward and downward, care being taken not to press against the ball.

The puncture and counter puncture are now made, with the Graefe knife, at the horizontal meridian and the corneal section is completed without pausing. A conjunctival flap is made at the finish.

The grasping forceps are now laid aside and, with the iridectomy forceps, the iris is caught and a broad iridectomy made. We do not think that the pupil is drawn up as much after a broad iridectomy.

The patient is next directed to look up, and the operator, with a blunt hook, presses directly backward on the cornea, below the horizontal diameter, until the lens leaves the hyaloid fossa. The hook then follows up the lens, directing the pressure so as to tilt the lens upward and forward until it is finally expelled.

The iris is then replaced at the angles of the wound. Before bandaging the eyes, we use a 1 per cent atropine ointment, with plenty of 1 per cent yellow oxide of mercury ointment.

We do not disturb the eye until the third day. A great deal depends upon the proper nursing and co-operation of the patient as to what the final outcome will be.

Operative Results

Case 1.—January, 1924. R. T. L., male, age 52. Left eye injured fifteen years ago by a piece of steel entering the ball. O. S. V.—count fingers at eighteen inches. First noticed cataract developing in the right eye six years ago; still able to count fingers in cataract eye. On account of poor vision in left eye, did not wait till maturity. Did intracapsular operation without complications. He was a model patient, left hospital on tenth day, eye in best condition. When refracted six weeks later, he got 20/20 vision with correction.

Case 2.—January, 1924. H. R. K., male, age 39. Mature cataract in right eye; light perception but not projection; vision in left eye, 20/100 with —9.00 sph. = —2.00 cyl. x 45. Did not expect to get useful vision in cataract eye after operation, but patient wanted it removed for the cosmetic effect. We removed the lens in capsule without any trouble. The eye healed nicely, but post-operative examination of the fundus showed old changes which prevented useful vision.

Case 3.—February, 1924. C. G., female, age 64. Immature cataract in each eye; still able to count fingers at eighteen inches. Intracapsular operation on right eye; no complications; left the hospital in ten days. Pretty eye from the operation, but an old fundus lesion prevented normal vision. She got useful vision, however, and was happy.

Case 4.—August, 1924. J. R. J., female, age 52. Mature cataract in left eye; immature cataract in right eye. Patient very nervous. She had twice been in the asylum. During the operation she was fractious and there was some loss of vitreous. She was unruly after the operation and could not be kept quiet. The third day she had a hemorrhage into the anterior chamber. This patient has since died, but, before her death, the hemorrhage had about cleared up. The last report we had she was able to read large print and the eye was improving.

Case 5.—February, 1925. E. L., female, age 50. Mature cataract in right eye; incipient cataract in left eye. Intracapsular operation performed; there was no loss of vitreous; or post-operative trouble. She got normal vision.

Case 6.—March, 1925. L. C. J., female, age 89. In spite of her age and feeble condition, we did an intracapsular operation on right eye. We have just received a report on this patient. She says that she is able to read fine print, and thread a needle.

If we had done the capsular operation on this old lady and it required an after-cataract operation, I am sure that she would not have returned for the second operation. It required some persuasion, on account of her age, to get her consent for the first operation.

Case 7.—May, 1925. H. A., female, age 80.

Hypermature cataract in left eye. Intracapsular operation was attempted, but the cataract was large and soft. The corneal incision being too small, the capsule ruptured when it was part way through the incision and we were unable to remove the entire capsule, thus making this a capsular operation, and an operation for the after-cataract is now necessary.

This patient does not understand why she has to have another operation, but in a large per cent of the cases a second operation after the old capsular method has to be done.

Case 8.—June, 1925. A. C. G., male, age 48. Immature cataract in right eye; mature cataract in left eye. Intracapsular operation, during which we estimate that at least one-fourth of the vitreous was lost. In spite of this, this man gets 20/20 vision and is using this eye altogether in his work.

It is doubtful with this amount of vitreous lost, if we had left behind the capsule and some lens substance to stir up inflammation, whether this patient would have gotten 20/20 vision.

Professional Building.

PROSTATECTOMY WITH REFERENCE TO PRE-OPERATIVE TREATMENT.*

By B. E. HARRELL, M. D., Norfolk, Va.

The past few years have marked wonderful strides in the surgery of the prostate. There have been many refinements in operative technic and many changes in preoperative and postoperative management. The mortality has dropped from 20 per cent to less than 5 per cent in the hands of a few skilful operators. There are still many problems of prostatic surgery unsolved, and as their solutions appear we may expect even this rate to drop still lower.

The mortality in the hands of a few skilful operators is low, but in the hands of the occasional or the unskilled surgeon, it is an entirely different matter. We have no way of knowing just what this death rate is, but it is certainly far above what it should be.

The most important part of a prostatectomy is what is done before operation. One will find that mortality will vary almost directly with the care and skill with which preoperative treatment is carried out.

The damage done to the urinary tract by a benign prostatic enlargement is primarily mechanical, in that by its location it causes an obstruction to urination. Most of the accompanying forms of bladder and renal disease may be traced directly to this one fact—that there is a mechanical obstruction. This obstruction causes the retention of a certain amount of urine in the bladder,—an amount that will vary with the patient's habits and his surroundings.

We are familiar with the changes that take place in the bladder wall as a result of obstruction. There is a definite hypertrophy of bladder musculature which may be observed with the cystoscope, and a definite thickening of the bladder wall. Along with this increase in musculature there is an increase in intravesical pressure. In one series of cases this tension varied from 30 to 55 c.m. of water in the resting bladder. On straining at urination this tension is naturally much increased.

It has been determined that the pressure within the renal pelvis is practically the same as the pressure within the bladder, regardless of how we believe this pressure to be produced. We have reason to believe that with an actively contracting bladder there is regurgitation up the ureter even in early cases. In a certain percentage of late cases the ureters become dilated, the uretero-vesical valve ceases to function, and there is a constant ebb and flow of urine along the ureter. But no matter whether we believe that there is regurgitation or that pressure is due to efforts of the ureter to empty itself against the tension of a distended bladder, the pressure is there and is about equal to the pressure within the bladder. Thus, the kidney is constantly exposed to a considerable back pressure, and on straining at urination this may rise to quite high figures.

The next question is, just how sensitive is the kidney to intrapelvic pressure? We shall have to answer this question somewhat indirectly. A blood pressure of approximately 60 millimeters of mercury at the kidney is necessary for the kidney to do its work; if the blood pressure falls below this point, secretion stops. If the difference between intrapelvic pressure and blood pressure falls below 60, the kidney stops secreting. For instance, if we have a blood pressure of 130, and raise intrapelvic pressure to 80 we have a "kidney pulse pressure" of only 50, which is not enough to carry on secretion.

We have the results in a series of cases

*Read before the Seaboard Medical Association, Norfolk, Va., December 2, 1925.

studied from this standpoint following routine pyelography. These cases were injected up to the usual end-point, the first sign of discomfort and, functional tests made daily thereafter till the kidney returned to normal. It was found that the injected kidney promptly lost from one-half to two-thirds of its function and did not return to normal for more than a week after the injection. We may believe, then, that the kidney is sensitive to intrapelvic pressure and may expect it to be damaged by back pressure from a distended bladder.

The most important single cause of death in prostatic hypertrophy is renal insufficiency. The chief problem of preliminary treatment is relief of back pressure to allow the kidneys to return to normal, or as near normal as we can get them.

There is little to choose between a cystostomy and a retained catheter. Some patients will do better on one, some on the other. A cystostomy probably gives a little better drainage than the catheter, but as a routine we prefer the latter. Most patients tolerate the catheter very well if it is properly placed and properly fastened. The introduction of any foreign body into the bladder will cause a certain amount of discomfort. But this usually passes off after a day or so and there is no further complaint. These patients can be up in a chair, can move about the wards as they please, and, I believe, are happier than those with a malodorous suprapubic dressing. But whatever method is employed, drainage should be continuous. Patients should be kept out of bed and encouraged to as much activity as their condition will permit.

To follow the progress of these cases we must adopt some test, or tests, of renal function, which should be done at frequent and regular intervals. All such tests have their limitations, which must be recognized to make our estimations of any value. We have found the phenolsulphonepthalein test and the estimation of the blood urea by far the most enlightening and most reliable. Six milligrams of 'phthalein are injected into the buttocks and two estimations are made; the first at the end of an hour and ten minutes, and the second an hour later. This test, however, cannot be followed blindly. For instance, a high output when drainage is first begun means very little as regards operability; it may be associated with a considerable urea retention. Also, under certain circumstances a patient may excrete only a small percentage, or even a trace of 'phthalein, and yet show no urea retention, and may be a fairly good operative risk.

The first thing that happens when back pressure is relieved is that there is a prompt and marked drop in kidney function. The function then through a period of days or weeks gradually rises and finally becomes stationary at a level considerably above its low point. Some care must be exercised in determining just when function has reached a level that justifies operation. First, the output for two hours becomes satisfactory, with most of the excretion taking place the second hour. If drainage is continued still further, the relation between the first and second hours is reversed and most of the excretion takes place in the first hour. This is the response of a normal kidney. A diseased kidney tends to work constantly at its maximum, but a normal kidney will have periods of great activity followed by periods of comparative rest. We have reached our end point when the kidney will excrete in satisfactory amounts and will do so promptly.

We cannot lay down any rule as to what amount of function justifies operation. To set a limit at 20, 40, or 60 per cent is impossible. The important point is that function becomes stabilized at a certain level—whatever that level may be—and that there is no considerable urea retention at this level. A patient with a fluctuating kidney function is a dangerous patient to operate on. He should be drained till his function becomes stabilized.

Several explanations have been offered for the drop in function that occurs when the drainage is begun. It is assumed that the sudden release of back pressure leads to an intense passive congestion of the kidney with a consequent decrease in activity. Again, it is held that an acute infection of the kidney or a flare-up of a pre-existing infection is responsible. Probably both these factors play a part, but we believe that infection is the chief offender. In these cases an extensive pyelonephritis may exist without any of the classical symptoms of infection. Many such cases at autopsy have shown extensive infection, even with cortical abscesses without having shown

either pain, tenderness, or elevation of temperature.

The patient with an infected urine is, other things being equal, a better operative risk than one without infection. No one would advocate that he be deliberately infected, but it is a common observation that his stay in the hospital is more tranquil than that of his uninfected brother. It frequently happens that the man who has been leading a catheter life without any ideas of cleanliness will be a candidate for early operation. He has relieved his back pressure, has developed an immunity to his infection, and his urinary tract is less liable to insult.

We have heard a great deal in the past few years about the apparent increase in circulatory diseases as a cause of death. The prostatic is particularly liable to suffer in this respect, since he is already laboring under quite a handicap. It is found that certain cases of cardiovascular disease are materially benefited by the removal of an hypertrophied prostate. When preliminary drainage is first begun, there is often a sharp drop in blood pressure within the first twenty-four hours. In one series this drop averaged 44 millimeters of mercury. The extent of this decrease seems to vary with the amount of residual and the degree of reduction in a renal function. The blood pressure then gradually rises and, after a period of a few days to two weeks, becomes stationary at a level equal to or below the level before drainage. If drainage is interrupted for any reason, the blood pressure promptly rises, only to fall again when it is resumed. Here again stabilization is necessary. The circulation should have a chance to adjust itself to the change in urinary pressure.

There is one type of patient that has been the cause of a great deal of worry. I refer to the patient who walks into the hospital, has his bladder drained, and in a few hours or a few days, passes on to autopsy. These patients are considerably relieved at first, and from 24 to 48 hours appear to be doing well. Then, without any apparent cause, they begin to fail, and usually go down hill quickly. This change may occur even with a good output of urine. If they live long enough, these cases often become extremely emaciated and seem to waste away almost from hour to hour. When this process has once begun, I know of no way in which it can be checked, but it may be prevented. The danger of suddenly relieving a massive retention has long been recognized. It sets up an intense congestion of the urinary tract, sometimes severe enough to cause hemorrhage from the bladder wall, and certainly invites infection. It has been recommended that we evacuate only a small fraction of the retained urine at each passage of the catheter. Also, various types of apparatus have been devised to maintain bladder pressure with a retained catheter in place. The pressure may then be decreased a certain amount each day until the bladder is empty. These maneuvers have been successful in preventing the collapse of this type of patient.

In evaluating our methods of determining when a patient is ready for operation, we should keep in mind two points:

First, that the patient must be stabilized both as to kidney function and as to blood pressure;

Second, that clinical judgment must play a large part in our decision.

No test can be an absolute indication of operability. Valuable as these tests are, there are qualities of expression, of manner, speech and mental alertness that indicate that vitality necessary for a successful prostatectomy.

607 *Medical Arts Building.*

THE PREVENTION OF ACUTE LOBAR PNEUMOCOCCUS PNEUMONIA.*

By I. K. REDD, M. D., Atlee, Va.

To fully understand the prevention of acute lobar pneumococcus pneumonia, we must change the text-book definition of "an acute infectious disease" to that of "an acute infectious and contagious disease," and class it, from the standpoint of preventive standards, with measles, diphtheria and other quarantinable diseases.

Man is always the source of the infection, each case of pneumonia being a focus for the spread of virulent pneumococci; therefore, the disease should require compulsory notification to Health Boards. The case should be isolated in the same manner that diphtheria is isolated, the discharges from the mouth, nose and throat burned, and bed linen, spoons, cups, etc., should be boiled or thoroughly disinfected in a phenol or bichloride solution. Those who enter the sickroom (and these should be limited to phy-

*Read before the Hanover County (Va.) Medical Society.

sicians, nurses and one member of the family) should be most careful as to personal hygiene, especially in cleansing the hands, and using a nose spray and mouth wash of some antiseptic solution. Gauze mouth and nose guards also lessen the danger of infection. Nurses should change their outside clothing on leaving the room. Patients should be kept isolated in cases of types I and II until these types have disappeared from the buccal cavities, or, if impossible to culture the secretions, for at least three weeks after the temperature has reached normal. The room should then be scrubbed, gone over with some germicide and exposed to the air and direct sunlight for several days. This takes care of dust which is a dangerous source of infection. These precautions eliminate to a great degree the probabilities of infection from the patient and sickroom.

We also know that healthy carriers play an important role in disseminating pneumonia; therefore, education of the public concerning certain sanitary habits should be actively continued. These include promiscuous expectorating, the common drinking cup, roller towels, kissing, careless coughing and sneezing, placing the fingers or any other unnecessary thing in the mouth, etc. Crowding should be discouraged, more especially during the cold months. Persons who sleep, work and play together have every opportunity of spreading infections of the upper respiratory tract. Thus, pneumonia is often epidemic in schools, prisons, institutions and industrial establishments. General George found pneumonia prevalent among workers in the South African mines. He took them out of barracks, gave them separate homes, and thus stopped epidemics. Close supervision and isolation of all upper respiratory infections, such as common colds, sore throat, influenza and bronchitis, are needed. It should be common knowledge that anything which tends to reduce vitality predisposes to pneumonia. Overwork, loss of sleep, hunger, worry, lack of fresh air, excesses of all kinds, should be guarded against. Health officers may assist by disseminating this knowledge by the regulation of ventilation in public buildings, by proper cleaning and oiling of streets, by enforcing anti-spitting regulations, by aiding in the search for carriers, and in the diagnosis of pneumonia through their laboratories.

Vaccines as a prophylactic against pneumonia are still in the experimental stage. I wish to give the results of several workers in this field, which, although incomplete, promise something for the future. Lister injected a large group of mine laborers at Kimberly, South Africa, with a triple vaccine made of the three types of pneumococcus that had been responsible for the pneumonia among the workmen, and noted less of the diseases than in those not vaccinated.

Cecil and Austin inoculated twelve thousands seasoned troops (20 per cent of the command) at Camp Upton, with a vaccine of types I, II, III. While the period of observation was only ten weeks after inoculation, no cases of types I, II, and III were observed in the vaccinated groups. Seventeen cases of pneumonia developed in this group against one hundred and seventy-two cases among the rest of the command.

Cecil and Vaughn immunized 80 per cent of the men at Camp Wheeler. A large number of these men were recruits and, therefore, more susceptible to the disease; also an influenza epidemic prevailed at the time. During a period of three months three hundred and sixty-three cases of pneumonia of all varieties occurred among the men vaccinated (80 per cent) and three hundred and twenty-seven cases among the unvaccinated (20 per cent). Only eight cases of types I, II, and III developed among those who were vaccinated and these were all secondary to severe cases of influenza.

Pneumococci immunity is strictly specific. Vaccines protect only against the pneumonia caused by those groups represented in the vaccine. Much more work will have to be done before a definite conclusion can be reached concerning the prophylactic value of these measures. Studies are now being made by a commission upon groups of many thousands, with equal numbers of controls. The results of this work will not be known for several years.

In closing, I wish to emphasize the fact that each case of pneumonia should be regarded as a focus for the spread of the infection, and should be treated with the same care that is given diphtheria or influenza, as an infection which is spread from man to man through the secretions of the mouth and nose.

References.

Rosenau, J. Milton: Preventive Medicine and Hygiene.

Austrian, Chas. R.: Acute Lobar Pneumonia, in Tice Medicine.

ETHYLENE—THE NEW GENERAL ANESTHETIC.*

By C. N. CHIPMAN, M. D., Washington, D. C.
Anesthetist to The George Washington University Hospital, and The Episcopal Eye, Ear, Nose and Throat Hospital.

Only a few years ago, chloroform was the anesthetic of choice; it was pleasant to take and easy to administer, but it caused so many sudden deaths and post-operative complications that it has been generally discarded as an anesthetic agent.

Then we had ether, with which we could anesthetize all patients, but we all know how unpleasant it is to take, and the prolonged post-operative nausea and vomiting we have in the majority of cases. Then an old anesthetic agent, nitrous-oxid, was revived, with many new kinds of apparatus to administer the same being tried out. It is pleasant to take, and the post-operative difficulties are few, but we can only produce surgical anesthesia in a limited number of patients without the addition of ether.

Within the past two years a new anesthetic agent has been tried out and it gives great promise of largely taking the place of ether and nitrous-oxid. The new anesthetic is ethylene, which is an unsaturated hydrocarbon having the formula C_2H_4, at ordinary temperatures and pressures. It is a gas having a peculiar odor. Ethylene may be prepared by allowing very small quantities of ethyl-alcohol to interact slowly with very hot sulphuric acid or orthophosphoric acid. As a result of this interaction, ethyl-alcohol loses a molecule of water.

Ingenhouss, in 1779, was the first man to generate ethylene. It is reported that Mr. Thomas Numely, in 1849, used ethylene as an anesthetic. There seems to be some question as to just what gas Numely used, and Luckhardt, after a close study of the literature, thinks it was "Dutch liquid" (ethylene chlorid) rather than ethylene. No matter what the early history of ethylene may be, no work of any importance was done with it as an anesthetic agent until 1918, when Luckhardt and Thompson independently established on frogs, rats, and dogs not only the anesthetizing, but also the analgesic properties of ethylene gas when used with oxygen. On April 27, 1923, Luckhardt and Carter reported the first 106 cases in which operations were performed under ethylene gas at the Presbyterian Hospital in Chicago. Since that time, various men all over the country have been using ethylene. The credit should go to Luckhardt for demonstrating the fact that ethylene and oxygen can be used as a practical and safe general anesthetic.

During the past fifteen months, I have used ethylene in 1,124 cases. In fact, since I started using ethylene I have not used nitrous-oxid-oxygen in one major operation. The 1,124 cases included various minor operations and such major operations as appendectomies, herniotomies, gastro-enterostomy, Cesarean section, radical amputation of breast, thyroidectomy, reduction of fractures, bone work, removal of gall-bladder, all kinds of vaginal work, obstetrical cases, etc.

Premedication

All adult cases have had morphine sulphate gr. ¼ and atropine sulphate gr. 1/150 before being brought to the operating room. Morphine not only relieves the patient before coming to the operating room, but it also is a powerful aid in producing a more perfect relaxation in all cases, especially the more resistant cases. With morphine, less ethylene is used, but more oxygen is required. There are a few anesthetists who object to morphine before any form of anesthesia. It adds so much to the comfort of the patient before and after operation and aids in producing so much better relaxation, that I wish to endorse it in the strongest terms. We too frequently forget the comfort of the patient in the rush of our daily work.

The Advantages of Ethylene Over Ether and Nitrous-Oxid and Oxygen

If ethylene is to become a safe and practical general anesthetic, it must have some very definite advantages over ether and nitrous-oxid-oxygen, the two general anesthetics now in daily use. These advantages are:

(a). Patients are quickly anesthetized and recovery is rapid.

(b). Reduced post-operative nausea and vomiting.

(c). Absence of cyanosis.

(d). Relaxation.

(e). Period of analgesia and anesthesia.

(f). Absence of sweating.

(g). Absence of headaches.

(h). Lack of gas pains.

*Read before the May meeting of the Medical Society of the District of Columbia.

(a). Patients are *quickly and easily anesthetized* without any struggling and without any discomfort or any sensation of suffocation. It is not uncommon, after the ethylene and oxygen is started, that there is not a single movement of hand or foot until the anesthetic is stopped.

There seems to be no excitement experienced during induction or afterward, as you have with both ether and nitrous-oxid-oxygen. On the contrary, the patient is very much composed, and will frequently sleep more or less if not disturbed.

Because of the ease of induction with ethylene, I have discontinued the use of nitrous-oxid as a preliminary to ether anesthesia. With ethylene-ether sequence, the patient is anesthetized more easily and more quickly than with nitrous-oxid-ether sequence. The patients recover from the anesthesia usually within one to three minutes. The mind is clear, the color is normal, and the patient does not look like he has just undergone a major operation. There is lack of excitement that is common after ether or nitrous-oxid.

(b). *Post-Anesthetic Vomiting*: It is always hard after any major operation. To say that the anesthetic is the sole cause for vomiting is misleading. The operation, morphine used before and after, doing without food, one or all of these combined with the anesthetic may cause nausea and vomiting. Under the same conditions, one patient may have nausea and vomiting, while the next will be entirely free of the same. Nausea and vomiting occur in about 75 per cent of the patients who have ether anesthesia.

With ethylene anesthesia, vomiting occurs in only about 25 per cent of the patients after they return to their room. Nearly all patients having ethylene any length of time will empty the contents of the stomach within the first minute or two after the anesthetic is stopped. From the amount of gastric juice, bile, and undigested food that is frequently emptied out on the operating table, this vomiting would seem to be beneficial rather than otherwise.

As most patients fully react from ethylene in one to three minutes after the anesthetic is stopped, the vomiting usually occurs before the patient is fully awake, and he frequently does not know that he has vomited.

The vomiting after ethylene anesthesia is usually projectile in character, coming on after fluids have accumulated in the stomach, and there is not that violent retching and nausea which prevails after ether anesthesia.

The patients who, on being returned to their room, are left absolutely quiet, are not permitted to talk, and are not given water by mouth for some hours, are much less apt to vomit. It is hard to make the friends of the patient, and even the nurses, realize that, although the patient following a major operation may be fully reacted, he is in no condition to talk. No one should be permitted in the room except the nurse, and the room should be well ventilated. The atropine used in the premedication may be the cause of some of the thirst, so in the future I am going to use only morphine sulphate.

All patients on being returned to their rooms should have water or normal salt solution per rectum, which will reduce this thirst and largely do away with the need of giving water by mouth for several hours.

(c). *Absence of Cyanosis*: With ethylene anesthesia, the color is usually about normal. The lips and ears are a good pink color. Some writers have stated that there is no cyanosis, but I have found that in a few cases you have a slight cyanosis of the skin, but in no comparison to that of nitrous-oxid, and not enough to cause a marked change in the blood. It usually means that you have reduced your oxygen too much. If you push ethylene anesthesia too deeply, you are more apt to have a pale, waxy color, unlike the deep cyanosis you get with ether or nitrous-oxid.

(d). *Relaxation*: I have been surprised at the degree of relaxation that it is possible to obtain with ethylene. I have in no case pushed ethylene to the limit: being a new anesthetic agent I felt it would be much better to use unusual care, especially as I have been working with various surgeons who themselves were not familiar with ethylene.

It is the ideal anesthetic for all kinds of vaginal work, the relaxation here being as complete as with ether. Very satisfactory anesthesia with ethylene is obtained for all kinds of work on the extremities and any external part of the body. I have had a number of patients under ethylene anesthesia for more than an hour without the slightest movement of hand or foot. Operations about the head and neck, such as thyroidectomies, are ideal for ethylene anesthesia. With my limited ex-

perience in the use of ethylene, I feel that the relaxation obtained in abdominal operations has been very satisfactory. In some cases, the relaxation has been as complete as that obtained with ether, while in others there has been some rigidity at times. If the abdominal muscles stiffen up, it only requires a minute or so to relax them by pushing the ethylene and reducing the oxygen. We have used ethylene without any difficulty in abdominal operations, such as gastro-enterostomy, removal of gall-bladder, appendix, hysterectomy, intestinal obstruction, etc.

In comparison of the relaxation obtained with ethylene, ether and nitrous-oxid, I should say that ethylene is several times more powerful as a relaxing agent than nitrous-oxid. Patients have been relaxed with ethylene when it would have been impossible to control them with nitrous-oxid. At present, we are not able in all cases to obtain the same degree of relaxation with ethylene as when using ether. There is little doubt as we become more experienced with ethylene that we will be able to relax many more difficult patients.

(e). *Period of Analgesia and Anesthesia*: Patients, after from two to five inhalations of ethylene, are in the state of analgesia, when minor operations may be performed without discomfort. Satisfactory surgical anethesia is obtained in two to seven minutes. Some patients who seem unusually resistant to ethylene the first few minutes, settle down and remain completely relaxed after that. It will be seen that patients are quickly anesthetized, and that they just as quickly pass from the anesthetic to the normal stage. This may mean a little hard work for the anesthetist and surgeon, but it is a distinct benefit to the patient.

(f). *Absence of Sweating*: Ethylene, unlike ether and nitrous-oxid, does not cause sweating during anesthesia. The skin and clothing remain dry, and this prevents chilling and loss of body fluids. It is seen at once that this should preserve the body heat, preventing post-operative shock, colds and lung complications.

(g). *Absence of Headaches*: Following both ether and nitrous-oxid anesthesia you have headache, fullness in the head and more or less excitement. With ethylene anesthsia you do not have headache or excitement. The patient is relaxed and quiet. My observations are that ether and nitrous-oxid are intoxicating and exciting drugs, while ethylene is a sedative drug.

(h). *Lack of Gas Pains*: The patient is apparently troubled less with gas pains after ethylene than after the use of other anesthetics. This has been reported to me by the nurses and other anesthetists. I have not been able to give this phase of the work much study.

Disadvantages of Ethylene

Luckhardt has listed odor, oozing and explosibility as the disadvantages of ethylene. The first two, in my experiences, have been minor factors; the third is less so, even less than ether vapor.

(a). *Odor*. Ethylene has a peculiar odor that is hard to explain, as I know of nothing similar. Some say it is like garlic, or the "old fashioned sulphur matches," although it is not in the least irritating. A peculiar feature about the odor is that when I started using ethylene every one in the operating room more or less disliked the odor, but after a few days I heard no more complaints, and now they will all tell you that it is hardly noticeable. The most remarkable thing about the odor is that I have yet to find a patient who can describe what it is like, or one who has complained of it being offensive. Most of them tell you that it has no odor, or that it is a sweetish odor, and that it is very much better than ether.

(b). *Oozing*: I have noticed no more oozing than with nitrous-oxid. The blood is always a bright red, and that may make it seem more marked. I watched very closely a radical breast amputation the other day, and they had a very dry field of operation.

(c). *Explosibility*: It is rather unfortunate that so much stress has been placed on the explosibility of ethylene, because it has frightened many so badly that they will not give ethylene a fair trial. Ether vapor, gasoline and gunpowder are all explosive; and that does not mean that we should discard them, but that, when using them, we have to use certain precautions. The same applies to ethylene when mixed with air or oxygen. U. Easson Brom has shown that ether vapor is more explosive than the ethylene-oxygen mixture used for anesthesia. He states that the mixture which can be exploded from an electric spark must contain a minimum of from 40 to 45 per cent of oxygen, also, that it would require six hours

for the air in the average size operating room, without the slightest room ventilation, to become full of a minimum explosive mixture. I know of two explosions and three fires which have occurred from ether vapor in operating rooms within the past two years in this city. The fires were caused from electric sparks, and the explosions from an electric cautery that was several feet away from the ether vapor.

The only precautions that are needed to make ethylene anesthesia free from danger of an explosion are to keep electric sparks and flames out of the operating room during an operation. This is what we have been doing for years with ether vapor, except when we get careless and take the chance of causing an explosion.

It has been suggested that an explosion may be caused by a static spark from the rubber tubing, apparatus, etc., but this is rather a remote possibility, for if static sparks were of frequent occurrence, we would be having daily explosions from ether vapor.

Failures

I have found that about 1 or 2 per cent of operations cannot be completed with ethylene alone. We usually find, when we change to ether in these cases, that we do not get along much better and that the breathing and relaxation are not much improved. We must remember that there are some patients who will not take any anesthetic used at the present time without a great deal of holding of the breath, cyanosis and poor relaxation. The one anesthetic agent that is ideal for all patients and all kinds of operations under all conditions, we have yet to find.

Case Reports

I will refer to only one case, as it is typical of a great many. A young physician about a year ago had his gall-bladder drained under ether anesthesia. He was nauseated and vomited several days and almost died from the effects of the ether. He said he would just about as soon die as to have to again take ether. He had to have another operation and selected ethylene. This time his gall-bladder and appendix were removed under ethylene anesthesia, as a result of which he had very little nausea and vomiting, no shock, and made an uneventful recovery. When asked how he liked ethylene, he stated that it was one hundred times better than ether.

Conclusions

1. Ethylene is a valuable general anesthetic that will soon be in daily use.

2. Ethylene should largely replace the use of nitrous-oxid because much better relaxation can be obtained.

3. Ethylene will never entirely replace ether because complete relaxation cannot be obtained in all cases, and it requires more skill in administering it and an extensive apparatus.

4. Ethylene is apparently not a dangerous anesthetic if reasonable care and skill are used. To date, ethylene has been given several hundred thousand times, and I only know of one death caused by it, and carelessness had much to do with that death.

1420 *Rhode Island Avenue, Northwest.*

FURTHER STUDY OF ANTIMONY IN VINCENT'S INFECTIONS.

By T. LATANE DRISCOLL, M. D., Richmond, Va.
Associate in Syphilology, Medical College of Virginia.

In 1922 the results of antimony in the treatment of "trench mouth" were published, more especially as to the large ulcers encountered. Since that time our results with the treatment of Vincent's angina, which is essentially the same as to etiology, only differing as to anatomic structures attacked, have proven our position as to the specificity of this drug in infections due to the pseudo-symbiosis of the bacillus fusiformis, and the Spironema vincentii.

Since the original report, which was only a preliminary publication, over one hundred cases have been treated, which includes all degrees of involvement from superficial erosions to a destructive gangrenous process, occurring at times at sites remote from those usually thought of as infected by these organisms. Thus there were six tibial ulcers; twelve ulcers of the penis, three situated on the glans, and nine on the prepuce; and one extensive ulcer of the nose involving the ala nasi. The balance of these infections developed on the tonsils, fauces, fancial isthmus, cheek, gums, and lips.

In most cases the organisms were demonstrated, but in those cases in which the organisms were not found the clinical phenomena justified a diagnosis, which was confirmed by the disappearance of the lesions by therapy.

We have not thus far had a case of lung involvement with this infection, but we would

suggest the potential cure by this method. Our routine technique since more careful investigation has been made to reduce the dosage from 10 c.c. to 5 c.c., as we believe that only a relatively small amount of any of the heavy metals is available, certainly as a spirocheticidal agent. Therefore, we give on alternate days 5 c.c. of 1 per cent tartar emetic intravenously. There are on the market commercial ampules of tartar emetic, but if the solution is made in the office, care should be taken that the water is freshly distilled, and sterile, and that a pure product of the drug is used. This should not be allowed to set for any length of time before injecting, as apparently a toxic fungoidal growth develops. A slow injection should be made, with the stomach empty, due consideration being given conditions constituting contra-indications for a relatively depressing drug.

Results.—All oral cavity lesions have healed in from one to four weeks. Occasionally it is necessary to have teeth scaled, or extracted, before there is a complete cessation of inflammatory reaction in gum lesions.

All penile lesions are healed, the limit being three weeks, with 50 per cent in about ten days. One case was lost sight of. One patient, age 64, with a rather large genital sore and a heart lesion, died in about six hours following an injection of 8 c.c. of 1 per cent tartar emetic. The nasal lesion had reduced to about one-third original size, when further treatment was refused.

BIBLIOGRAPHY.

Driscoll, T. L.: *Dental Cosmos*, 64, 23, Oct., 1922.
Driscoll, T. L.: *Va. Med. Monthly*, 51, 233, July, 1924.

Medical Arts Building.

SYPHILIS OF THE STOMACH: REPORT OF A CASE.

By L. MINOR BLACKFORD, M. D., Rochester, Minn.
Fellow in Medicine, Mayo Clinic.

Syphilis of the stomach occurs so rarely as to warrant the report of an additional case.

A man, aged forty-seven, came to the Mayo Clinic July 6, 1925, complaining of "stomach trouble." About twenty years previously he had begun to have a bad taste in his mouth less than an hour after meals for three or four days, then there would be a remission of several months. Gradually, bloating and occasional vomiting occurred. He found he could abort an attack by inducing vomiting and living on a milk diet for a few days. Acid and fried foods increased his discomfort. About fifteen years before examination, his stools were black for a time and then he improved to such an extent that six years before he was entirely free from any type of gastric symptoms except slight bloating when he allowed himself to become constipated. In 1914 he developed a phallic lesion which was diagnosed syphilitic. He was treated for syphilis for three weeks, and there were no secondary manifestations. About two years before he came to the clinic, following dietary and alcoholic indiscretion, the gastric symptoms returned in an aggravated form. Bloating was the outstanding feature, and besides almost constant discomfort in the epigastrium, there was soreness at times. He felt nauseated about once a week and vomited about once a month. A year before examination he had taken soda with questionable relief, and for three months had been taking tincture of belladonna with similar results. During the preceding six months he had not felt equal to the responsibility of driving a locomotive, since on more than one occasion he had found himself passing signals. During this time he had occasional lightning pains in the left side. He had lost twenty-three pounds in the last two years. In giving his history he displayed emotional instability.

Examination showed a well-developed, well-nourished man with a small scar across the dorsal surface of the corona. The right pupil was larger than the left, and both were irregular and contracted. They reacted to light but not to accommodation. Patellar reflexes were absent. The tonsils were small and buried. Roentgenograms of the teeth showed no periapical infection. The thoracic organs and abdomen appeared normal. The prostate was small and firm, and there was bilateral fibrosis of the epididymes. The blood pressure was normal, and urinalysis negative. Fractional gastric analysis revealed 120 c.c. of normal appearing fluid with a subnormal acid curve and an absence of free hydrochloric acid. Fluoroscopic examination revealed an ulcer on the posterior wall of the stomach near the pylorus. A tentative diagnosis of syphilis of the stomach was made. The Wassermann reaction on the blood and spinal fluid was strongly positive; the Nonne reaction was positive, there were 57 cells for each cubic

millimeter, and the colloidal benzoin curve was 001100033330000.

After the second administration of arsphenamin, all gastric symptoms disappeared and the patient said he felt better than for five years. About this time hyalin and granular casts were discovered in the urine and it was therefore necessary to restrict his diet. At the conclusion of a course of intensive treatment for syphilis, gastric chemism was unaltered, but no evidence of an ulcer in the stomach was found either by the fluoroscope or roentgenogram.

The patient returned home with a good appetite and soon regained his normal weight. He felt so well that he resumed work and only missed two days from it until he returned to the clinic for treatment five months afterward. It would seem that irregular hours, and fried foods, of which he was particularly fond, did not agree with him, for after about ten weeks he began to lose his appetite and have sour eructations. He returned to a bland diet for a time, with improvement. His weight increased again and was stationary for several weeks at a point 5 pounds above his weight on leaving the clinic. When he returned

Fig. 1.—Prepyloric narrowing. The ulcer on the posterior wall could not be shown.

January 12, 1926, his principal complaint was of discomfort low in the abdomen when constipated. A second course of treatment again restored him to a sense of complete well-being. The gastric analysis gave essentially the same findings as before, and the report on the roentgen-ray examination was: slight prepyloric narrowing, probably due to syphilis (Fig. 1).

Comment

In addition to early taboparesis, the diagnosis of syphilis of the stomach rests on the following points: (1) the history of infection eleven years before, and the positive Wassermann reaction on blood and spinal fluid; (2) definite evidence of syphilis elsewhere in the body; (3) demonstration of a definite circumscribed lesion of the stomach by the roentgen rays, associated with achlorhydria, and (4) disappearance of the ulcer, as demonstrated by the roentgen rays, and clinical improvement following treatment for syphilis.

Flatulency, nausea, emesis and the absence of hemorrhage were features, as in the majority of cases reported by Eusterman, but pain was less pronounced. This patient was somewhat older, and the duration of his specific infection was one year less than the average of twelve years. As in typical cases, there was a fairly marked progressive course with achlorhydria and loss of weight without cachexia. The sensation of rapid filling of the stomach, which is present in the contracted or hour-glass types, as pointed out by Eusterman, was not prominent in the history of this case.

The unusual feature is the clinical evidence of peptic ulcer with perhaps hemorrhage antedating the initial lesion, and its apparent cure four years before the onset of symptoms attributed to syphilis of the stomach.

Bibliography.

Eusterman, G. B.: Syphilis of the Stomach: A Clinical and Roentgenologic Study, with a Report of Twenty-three Cases. *Am. Jour. Med. Sc.*, 1917, cliii, 21-39.

Syphilis of the Stomach: A Report of Forty Cases in Which There Were Demonstrable Lesions and Therapeutic Cure or Improvement. *Am. Jour. Syphilis*, 1918, ii, 205-219.

Syphilis of the Stomach: Report of a Case. *Med. Clin. N. Amer.*, 1919, iii, 669-680.

Circumscribed Syphilitic Ulcer of the Stomach: Report of a Case. *Can. Med. Assn. Jour.*, 1922, xii, 91-94.

THE DIAGNOSTICS OF THE ACUTE ABDOMEN.*

By BEVERLEY F. ECKLES, M. D., F. A. C. S., Richmond, Va.
McGuire Clinic.

The "acute abdomen" is a general term covering a wide range of pathologic conditions, in all of which abdominal symptoms are promi-

*Read before the South Piedmont Medical Society, at Danville, Va., April 23, 1926.

nent or urgent. In hospital practice these conditions occur frequently. At the McGuire Clinic last year nearly 15 per cent of the surgical cases came under this division; that is, about one out of every six surgical cases admitted demanded prompt and accurate surgical diagnosis.

In general practice the "acute abdomen" is not met so frequently, but, when encountered, is of such urgency that I trust another discussion of this ever-present class of cases may not be without some interest at this time.

This paper deals with the diagnosis of these conditions, since success in their treatment often depends upon the promptness of their recognition. The prognosis frequently is directly influenced by the time elapsing between diagnosis and operation.

The more common of these diseases are acute appendicitis, acute cholecystitis, gall-stone colic, ruptured duodenal ulcer, acute intestinal obstruction, strangulated hernia, acute pyelitis, kidney colic, and, in the female, acute salpingitis, ectopic pregnancy and ovarian cyst with torsion of its pedicle. Traumatic rupture of one or more of the viscera must also be included.

Not all of these are immediately operative conditions; some, such as acute pyelitis, may require no surgical treatment. In others, such as acute salpingitis, it is much safer to wait until the acute attack subsides before operative treatment is attempted. Nevertheless, they should all be borne in mind when one is confronted with symptoms and signs that might arise from any one of them.

This enumeration divides these cases into three broad classes: those of the gastro-intestinal tract, those of the urinary tract, and those of the female generative organs.

The clinical significance of this division lies in the principle that organic disease in any of the viscera will be manifested by derangement of its function. The symptoms and signs, therefore, if properly elicited and interpreted, should indict the organ most affected, in the given case. It is the purpose of this paper to discuss briefly the fundamentals on which such an indictment may be drawn.

A correct diagnosis is based upon data secured in one of three ways:

First, through searching questioning of the patient—the history of the case.

Second, through the diligent careful use of the examiner's special senses—the physical examination.

Third, through such laboratory tests as may be deemed necessary or helpful in the light obtained by the history and the examination.

No one of these three can stand alone; too often the most careful correlation of all three is insufficient. In the majority of cases, however, they form the tripod on which the diagnosis firmly rests.

The first of these, a complete history of the case, is of prime importance. Except in the presence of the gravest emergency, it should not be hurried over. It should include a complete story of the patient's past life, noting especially previous operations or other trauma; grave illnesses; and, in woman, a thorough knowledge of her menstrual and child-bearing history. There should be a detailed account of the present attack, fixing the date of onset and the appearance, in order, of all of the symptoms. A record of previous similar attacks is of great interest, since such conditions as appendicitis, gall-stones, renal calculi, pyelitis and salpingitis are notoriously prone to recur. The patient should be encouraged to tell the whole story completely, and to tell it in his own words. Often essential points or important leads are furnished voluntarily in this way.

The physical examination should be equally searching. It should include cognizance of the posture of the patient, his mental attitude, and his facial expression. It demands an inspection of the ears and throat, especially in children; testing of the pupillary reflexes; a careful chest examination to learn the condition of the heart and lungs, and to eliminate such frequent causes of abdominal pain as central pneumonia or diaphragmatic pleurisy; and a complete study of the abdomen.

The abdominal examination should include—

Inspection, noting the contour of the abdomen, the character of respiration, the activity of peristalsis, the amount of distention, and the presence of previous scars;

Thorough Palpation of the whole abdomen, the lumbar regions, and of all potential hernial orifices in order to ascertain the presence of a hernia, the resistance of the abdominal wall, the location and degree of tenderness, the presence and character of masses or the presence of free fluid; and occasionally *percussion* and *auscultation* to determine the density of under-

lying structures or the activity of the peristaltic waves.

In addition to this study, it often happens that a careful vaginal examination, a digital exploration of the rectum, or catheterization of the bladder with urinalysis may assume a commanding position in the solution of the problem.

The laboratory examinations of most importance are the total and differential white cell counts, the urinalysis and the estimation of the haemoglobin and red blood corpuscles.

The physical findings to be sought for and appraised are the temperature; the pulse; the respiratory rate; the presence, location, character and radiation of pain; the appearance of localized tenderness, muscular rigidity and abdominal or pelvic masses; the presence of a hernia; the amount of distention; the activity of peristalsis; nausea and vomiting, and their character; and the degree of shock and its source. Not all of these will be present in any one case, but nearly always enough of them may be found to establish a working diagnosis and to determine the necessary treatment.

The laboratory examinations supplement the history and physical findings. For instance, a low haemoglobin and red cell count indicate a hemorrhage that may be concealed; a high leucocyte count and increase in the polynuclear white cells usually indicate infection and give a clue to its severity and to the bodily resistance.

Careful chemical and microscopic urinalysis may definitely indicate a lesion in the urinary tract or may equally definitely exclude one.

X-ray examination is of great value in many cases, particularly where biliary or renal stones are suspected, or where the physical findings in the chest require immediate confirmation or negation.

The facts gotten from the history, the physical examination and the laboratory are assembled and studied by the clinician in the light of his experience; and his interpretation of these facts is the working diagnosis.

The correctness of the diagnosis is directly dependent upon the thoroughness and completeness of the study of the case. The differential diagnosis should include not only the surgical possibilities within the abdomen but also non-surgical abdominal conditions that may give similar manifestations, and those acute diseases of the chest in which referred abdominal pain is a prominent sign. Among such diseases may be mentioned intestinal parasites in children; tabetic crises in older people; and, as stated above, diaphragmatic pleurisy or a deep-seated pneumonia at any age. Even typhoid fever at times presents a very real difficulty in differentiation. In many cases a correct diagnosis is impossible at the beginning. If the condition is alarming and the need for haste is urgent, one should not wait to make a definite diagnosis but should immediately transport the case to the nearest hospital. Where the symptoms are vague but disquieting and the need is not urgent, repeated examinations should be made at short intervals, watching the progress of the attack and seeking definite localizing signs.

The clinical picture may change markedly in a few hours. New symptoms may develop; general symptoms may localize sharply to some one area; or the blood picture may undergo a radical change. The responsibility in such cases is great, and the very life of the patient may depend upon the prompt recognition of indications demanding immediate operative relief. The necessity, then, of close observation and repeated examinations is upon us.

During this trying time between the onset of the attack and the appearance of diagnostic features, there are certain rules of practice that are axiomatic:

First.—Keep the patient in bed.

Second.—Avoid the use of any purgative. An enema is permissible, and in certain cases furnishes diagnostic information.

Third.—Withhold all food, allowing only water by mouth; or, in the absence of nausea and vomiting, fruit juices and broths.

Fourth.—Give only enough morphine to satisfy humanitarian needs, but not enough at any one time to mask the appearance of important symptoms. Small doses repeated as needed are far safer.

Fifth.—Persist at each visit in the search for symptoms or signs that will bring the diagnosis out of the darkness of speculation into the light of certainty.

Sixth.—When the attack does not quickly subside, but remains stationary or increases in

severity, do not delay action for the sake of a definite diagnosis. In this case an exploratory operation will not only make the diagnosis clear, but may save a life.

MEMORIAL MEETING OF THE NORFOLK COUNTY MEDICAL SOCIETY, TO HONOR THE MEMORY OF DR. HENRY R. CARTER, LATE ASSISTANT SURGEON-GENERAL, U. S. P. H. S.*

A Resume of Papers and Remarks.

By B. M. BAKER, M. D., Norfolk, Va.

Dr. Stanley H. Graves was good enough to allow me to use the President's Night as a memorial to Dr. Henry R. Carter on November 30, 1925. There was a large gathering of medical men and, in addition, forty or fifty of his old friends and patients who live in Norfolk honored us with their presence.

It is with great pleasure I note the fact that no one whom I asked to take part in this meeting failed to accept, and in the most gracious manner. They were all willing to do their part, no matter what it might be, to do honor to this great man. They were such men as Dr. Hugh S. Cumming, Surgeon-General of the U. S. Public Health Service; Dr. William S. Thayer, of the Hopkins; Dr. George B. Young, of the University of Virginia; Dr. Lomax Gwathmey, of Norfolk; Judge Thomas H. Willcox, of Norfolk, and I permitted myself to say a few words.

Dr. Cumming's address was in the shape of a most attractive and beautiful sketch of Dr. Carter's life of service for the Government and as a great sanitarian. He reviewed fully the life of this great man, and his wonderful accomplishments. He said that—

The two most notable things of his doings which stand out prominently and which were responsible for revolutionizing the handling and eradication of yellow fever and malaria were:

First: In connection with yellow fever, he paved the way through his contribution, "The Period of Extrinsic Incubation of Yellow Fever,"—that is to say, through his suggestion it was later developed by others; that beyond question yellow fever was not transmitted from person to person, but that the mosquito was the medium through which it was transmitted.

Second. It was in the field of malariology that Carter did his best work in the last twenty years of his life. At Roanoke Rapids, North Carolina, in 1913, he conducted, with conspicuous success, the first campaign for the control of malaria attempted in this country. He was one of the first investigators to invite attention to the effect of impounded waters, incident to the rapid development of water-power plants, on the prevalence of malaria, and he established certain principles on this point which are of far-reaching importance from both public health and economic viewpoints.

During the World War he was in charge of the control of malaria in the extra-cantonment areas of the camps east of the Rocky Mountains.

It is difficult to say which of his two great pieces of work, the suggestion and institution of precautions to be taken at the ports of departure, which Kitasato described as the greatest advance in maritime quarantine since the days of Venetians, or his work in the extrinsic period of yellow fever, has done the most good for commerce and public health.

Great, however, as were his professional achievements, I believe that his most far-reaching work was in the inspiration and guidance which he gave all fellow officers, and, in fact, all with whom he was thrown in personal contact. I cannot do better than quote Dr. M. E. Connor, director of the International Health Board's yellow fever work in Central America:

"With the passing of Dr. Carter the medical profession loses a foremost epidemiologist and one of its keenest intellects, the field of preventive medicine an intelligent advocate. He possessed vision and courage, a profound understanding of human nature, and a wide knowledge on many subjects. He had so much to give and gave of it so generously that all who came to him were well rewarded; while his only reward appears to have been the satisfaction of knowing that he had encouraged men to a belief in themselves and their work. His mind was always open, tolerant, and enquiring.

"To Dr. Carter we are indebted for the present method of eradicating yellow fever from communities through the reduction of the Aedes aegypti by attacking this insect in

*Memorial meeting of the Norfolk County Medical Society, held at Norfolk, Va., November 30, 1925, to honor the memory of Dr. Henry R. Carter, late Assistant Surgeon-General, U. S. P. H. Service.

its aquatic stage of development, and for many of the short cuts in the practical application of these measures. I once saw him in a foreign country combating yellow fever, acting as an inspector, directing the work over a large area, and paying the salaries and other expenses out of his own funds as the government had no funds and no prospects of any for some time. He did this and saved the lives of many who otherwise would have died. He loved to help others."

Certainly after such an active, full and successful life of accomplishments, Carter could have felt justified in feeling entitled to a life of comparative ease when he reached the age of 60. In fact, when he was relieved from duty as Director of Hospitals in Panama, his health was exceedingly bad and he would have been justified in asking to be retired. In his own mind his work had largely been done, but some of Carter's most important and far-reaching work has been accomplished in the last fifteen or twenty years, both as a Service Officer and since his retirement, in his connection with the International Health Board of the Rockefeller Foundation. While in the latter capacity, he served as a member of the Board's Yellow Fever Commission, headed by Gorgas, and did much to assist that organization in its eradication of yellow fever throughout the world. As Sanitary Advisor to the Peruvian Government in 1920 and 1921, he did splendid work in bringing under control a severe epidemic of yellow fever in that country.

Dr. Thayer's theme was "Affectionate Personal Reminiscences."

It is with great regret that I have to tell you that Dr. Thayer was unable to do more than give one of his attractive extemporaneous short talks, not having had time for preparation of anything more.

I have, however, taken from the *Johns Hopkins Bulletin* the following:

"'Twas my happy fortune to have known Dr. Carter for more than thirty years. He was a rare figure. Gentle, considerate, wise and learned, he was the arch-type of a gentleman and a scholar. But he was more than this: modest, simple, clear-eyed, and clear-headed, he was one of those rare men who saw; who saw accurately and described clearly that which he saw. A mind unbound by habit or tradition or prejudice, free and open to balance impressions, with a power of perception and judgment keen and ready to grasp the kernel of truth behind its baffling mask. He was not only a gentleman and a scholar, he was a seer.

"The freshness of his mind, his devotion to his studies and his enthusiasm were quite untouched by the cruel physical disabilities from which he suffered during the latter years of his life.

"I can see him now as I saw him last summer, in his bed where but a few days before he had been at death's door, surrounded by his books, talking as charmingly and as engagingly of his work and his projects as in the days of his physical strength.

"To such men naturally come those complements necessary to fill out their lives and to round out their undertakings, and, thanks to his lovely and devoted daughter, he was able in great part to finish the work to which the energies of his last years were devoted. The loss is sad, but the memory is lovely and inspiring."

Dr. Young spoke on his association with him in the Public Health Service during many years:

"On one of Dr. Carter's numerous yellow fever campaigns, he was trying to make his way 'cross country' through a network of local 'shot-gun' quarantines when he was held up by a quarantine guard. With that marvelous capacity for adjusting himself to the intelligence of his auditors that amounted to a positive genius for human associations, Carter engaged the guard in a discussion of the ethics of 'shot-gun' quarantines generally. The pair sat down and talked it over. Then the guard led Carter to where his three associates were seated around a camp fire and thus introduced him: 'This here is Doc. Cyarter. He hev more sense fur a quarantine man than any one I ever see!' Carter gained his point and was allowed to proceed.

"The incident is typical. By adapting his methods to the necessities of the case, and because he had more sense than most 'quarantine men,' Carter went through his career mastering difficulties and overcoming opposition.

"He was a most unusual personality. He was fully alive to the supreme importance of the work he had done, but absolutely indifferent to the idea of rewards or recompense. At the same time, he sincerely appreciated the

acknowledgment of his services by those competent to have an opinion.

"I fear it is quite impossible at the present time to properly set the stage so as to provide a background for his achievements. To rightly appreciate what he did for his beloved Virginia, all of the Southern States, and the great countries to the South of them, you must remember the state of things in the middle seventies. Hardly more than a decade had passed since Appomattox. The whole South was struggling painfully to its feet and needed above all things an opportunity for the uninterrupted development of natural resources. But almost yearly came the alarm from somewhere in the South, 'yellow fever'! Almost over night business was interrupted, commercial intercourse was largely suspended. Ports were closed and even the mails passed with difficulty. Community was quarantined against community and gave expression to their terror by quarantine activities and by senseless rulings, many of which would arouse our laughter now, but which were matters then of a tragic significance.

"The men who fought tirelessly and courageously to change these conditions are mostly dead and forgotten now. Carter was one of the chief of these,—perhaps the greatest of them. But who among the millions in our Southland and abroad, who goes about his business without interruption, thinks of the debt he owes to this man? The real estate men who are engaged in exploiting Florida at the present time would be surprised to learn that but for the little pamphlet into which Carter condensed the results of twenty years of effort and study, the unnumbered pages of their advertising campaigns could never have seen the light.

"His career falls naturally into four periods:

"First, as a quarantine officer, when through study and experiment he was seeking and finding methods for improving the technique of his occupation.

"Second, as an administrator, working out the larger problems of local and inter-state quarantine, passing on to the still larger problems of Cuba and Panama.

"Third, the time when, the yellow fever fight having been won, he turned to the solving of the malarial problem, created by the rapidly increasing hydro-electric installations of the South.

"Fourth, the few years when his great achievements were more fully recognized, and he was employed as an international sanitarian, called to the aid of some of the South American countries.

"He had the most self-sacrificing sense of what he felt to be his duty. When he had just come through a zone supposed to be infested with submarines, he described his feeling on being ordered to keep his stateroom dark and to take other precautions. 'Of course, I did as I was told, but I could not but think we were missing a great opportunity. There was a Major General on board, and some Colonels and other dignitaries, and I have a certain amount of prominence, so I couldn't but think as I lay in my bunk, how, if the Germans would just torpedo this ship, it might inspire the United States to get into the war. I would have gladly gone for that.'

"He was fully sensible of the importance of rank in the transaction of human affairs, but had a whimsical sense of proportion about the use of its insignia. During the war he was examining some swampy areas near Norfolk and came to my house to dinner looking as only Carter could look after some days of such work. He was in uniform, but his rank insignia were missing. His explanation was characteristic: 'The eagle is a noble bird. He soars aloft. He doesn't wade through swamps. So, when I have to wade through swamps I put my eagles in my pocket.'

"Those who knew him best love to recall his gentle humor in recounting innumerable stories of his adventures, and of his hairbreadth escapes, for he faced real dangers with an equanimity that nothing could disturb.

"He was so human; so just, but yet so charitable in his judgment of others, unless the matter involved the honorable discharge of some duty, the neglect of which imperiled others. Then he could be ruthless.

"His achievements are a part of the Sanitary History of the past forty years, but those who knew him best almost forgot their admiration for the sanitarian in their affection for the man."

Dr. Gwathmey's subject was "Dr. Carter's Relation to Norfolk Doctors and Their Patients as a Clinician."

"At Dr. Baker's request, I gladly recall some memories of a cherished friendship with a well-beloved confrere, who, in the early days

of our struggles with inadequate facilities, by word and deed encouraged high professional ideals.

"Dr. Carter came into my life at the formative stage, when the many present facilities for accurate work were lacking, and when there had to be concentrated in one man many of the diverse attributes now disseminated among groups of workers. For, while we collectively knew less, we individually had to know more. The surroundings in those days were quite different from the present day hospital environment: one must visualize a hospital without nurses, laboratory facilities, anaesthetists, and the many present conveniences, to appreciate the part in the community life Dr. Carter came to occupy.

"He lived in one wing of the hospital with Mrs. Carter and the small children, and operated his wards in the same wing. His activities, however, extended over the entire hospital, for every one soon learned to call on him for all kinds of advice and assistance. This aid he gave freely, cheerfully, and with such simple kindliness that it never seemed to carry a bestowal of a favor or the thought of a reward.

"Medical problems were all too often relegated to a controversial determination, lacking positive methods of diagnosis, and to such arbitrament Dr. Carter brought a disinterested opinion, presented in such simple, kindly fashion, that it could not fail to benefit both medical men and patients.

"While his most notable achievements were in the field of sanitation, yet in Norfolk his work was mainly clinical in character, and to this work he brought his ever-abounding energy and logical mind.

"I think we may truthfully say of his mental and physical activities that he was the embodiment of what Osler called the master word in medicine—'*Work*.'

"His alert mind and body seemed ever on the go, seeking always for knowledge and for the wisdom to employ it,—an abounding energy loosed in a limitless world of knowledge.

"So quietly and unobtrusively did he go about his duties that his self-effacement appeared as diffidence; nevertheless, he never lacked firmness or courage or failed to take a positive stand when he felt it to be justified by the facts. Courage was undeniably one of his outstanding qualities, *i. e.*, true courage, admitting his errors and failures freely and seeking counsel and advice from any quarter. It was this courage and quality of looking things squarely in the face that made him the factor that he was in our community life, and gave to the younger men who knew him a better standard of the medical man: the scientist who always seeks the truth.

"Knowing his own limitations in technical execution, he freely used the younger men's hands to carry through to successful conclusion procedures which his presiding genius evolved, never apparently taking credit for his own and greater part in the work.

"Looking back over these many years, with other crowding memories of fine professional men with whom I have had the honor to serve, there appears no one to whose character building qualities I can pay more earnest tribute than to Dr. Carter's.

"I had the honor of his confidence in attendance on his family and in consultation with his affairs even after the late war. Under stress and trouble he never flinched, and even in the most trying ordeals of his loved ones his courage was always the same.

"Of his kindness and sympathy with physicians, much could be said. Suffice it to recount one small incident. We were operating for a kidney stone on a doctor's brother, localization uncertian; failure seemed imminent when unexpectedly the small stone was discovered. I shall never forget his heart-felt, thankful, reverent 'Thank God' for his brother's sake.

"It has been said, 'The business man seeks to make money, the laboring man labors to make a living, and the professional man strives to make a life.' Dr. Carter did just that,—made character in all his contacts.

"Of him we can say in all sincerity what Robert Louis Stevenson said of the physician, 'There are men and classes of men that stand above the common herd,—the soldier, the sailor, and the shepherd not infrequently; the artist rarely; rarer still the clergyman; the physician almost as a rule. He is the flower (such as it is) of our civilization; and when that stage of man is done with, and only to be marvelled at in history, he will be thought to have showed as little as any the defects of that period and most notably exhibited the virtues of the race. Generosity he has, such as is possible to those who practice an art, never to those who drive a trade; discretion tested

by a hundred secrets; tact tried in a thousand embarrassments, and, what is more important, Herculean cheerfulness and courage. So that he brings air and cheer into the sick room and often enough, though not so often as he wishes, brings healing.'

"I lay this homely wreath with reverent hands to the memory of the simple, kindly, unselfish friend, the perfect gentleman, the great physician."

Judge Willcox, in giving a layman's estimate of him while he was in Norfolk, said:

"He was a distant relative of mine, but he was more; he was my friend.

"He and his family lived in quarters at St. Vincent's Hospital, and they influenced the atmosphere of the whole place and made better each person with whom they were thrown. Every one loved and admired him, and no one was too small for him to stop and listen to. He was ever ready to help and to cheer and expected no pay. Gladly did he give, and he had that to give few men possessed. He brought cheer and confidence whenever with a patient. On Sunday, whenever possible, he was found with his family at dear old St. Paul's Church.

"May I thank you for giving me this opportunity of being one of this great gathering of medical men and lay friends to do honor to Dr. Carter, who was in every sense lovely, and to whom honor was justly due. His life must surely have been a great inspiration to the members of this noble profession of which he was a member."

Dr. B. M. Baker's remarks referred to Dr. Carter "As a Friend."

"Illustrative of his simplicity and guilelessness during the time of a visit to my house of this great man, Mrs. Baker was narrating to him the difficulty she was having with our daughter and her mathematical problems, when Dr. Carter broke in and said he had had a similar time with one of his children, and that he had just stopped her arithmetic temporarily because, after all, no one could solve the present day arithmetic problems which mostly ran like this: 'If the age of the conductor of a train is 49, the brakeman's 38, the engineer's 27, what is the age of the fireman?'

"Then, further, I would say that during the late war, late one afternoon, the Doctor was coming out of the gate of one of the big camps of which he was in charge, when an old man and wife stopped and asked him if he would tell them where their son Bill Jones was, and he, knowing they would never find Bill Jones by themselves in that crowd of 5,000 boys, took them in his auto and carried them back and found Bill Jones. Here Mrs. Baker remarked, "Dr. Carter do you know that you are perhaps the only officer of your rank in the United States Army who ever did such a thing."

"During a social visit of my son to one of the greatest physiologists in the world, the conversation touched on the standing, etc., of Government officials (The Medical Corps), and my dear boy, then at Oxford University, told the story of Dr. Carter—just read. In reply to Ben's story, this great man dropped his chin for a second and then raised it, saying as he did, 'Yes! Yes! fine!' and a large tear was seen to roll down either cheek.

"Illustrative of the man himself as I knew him, I know no better way of setting it forth than to read you, in his own words, a letter which came to me just about a year before his death, as follows:

"'My Dear Ben Baker:

'It was a pleasure to get your note of the 18th instant, received yesterday, and I could almost see 'Miss Baker' (my daughter at five years of age) telling her 'little 'tory 'bout me.'

'I knew that your son was at Oxford. I wrote you when he received the scholarship. From Osler's account, there were far better places to study medicine than Oxford at the time he went there as Regius Professor. He was trying to introduce changes in both method and curriculum when I last saw him.

'Yes, I am down and, but for Laura, would be out. I retired; went on the retired list on May 5, 1920, at the end of 41 years of active service. I was due the previous year, but was kept on, on account of the war. I went then to Peru (indeed, went down in February on leave on that pay status) and stayed there as Consultor Sanitario for 22 months—substituting for General Gorgas (at his request) until his death, and then afterwards in charge for the Peruvian Government of a rather extended epidemic of yellow fever and a larger, but less intense, one of plague.

'Last Fall I was doing some work for the Aluminum Company of America, making a malaria survey of a large pond of one of their hydro-electric plants in North Carolina, when I had an attack of angina pectoris and lay

13 hours under a dogwood bush before I could get any nitro-glycerine. This was the 3rd day of August and I stayed in the hospital, there, (Bodin, N. C.) until October 8th, having two other attacks in the interim: thence to Hopkins where I stayed until November 15th: thence over here, where I was confined for three and a half months to bed, and then to one floor to July 10th. Then I went to Kingston, Jamaica, to attend the Conference of Tropical Medicine and Hygiene there; thence, on my return trip, to Panama, where I spent two weeks at my old 'stamping ground,' thence home via Carthagena, Star Marta and Havana, getting back September 8th.

'I stood the trip well, was carried aboard ship in a chair, as I had to give a promise not to go up more than 3 steps. But once aboard, I minded the ship no more than I would a hotel, although we caught the tail end of a hurricane, on our return, off Cape San Antonio.

'I am down and can do no more field work, and, but for Laura's help, could do no more of any kind. I am, since January 22nd, supposed to be writing a History of Yellow Fever for the International Health Board (Rockefeller Foundation), but have been able to do very little on it since my attack. I have about 25 pounds of notes still to write up, but, in addition, have to go to the Congressional Library for data lacking from time to time. This I could not do at my former quarters, because I was on the 3rd floor and with no elevator. Here we have an elevator and I can get in and out, and, with a taxi, can get to the Library. No one save a member of Congress, a head of a Department, or a newspaper man can take books out of the Library, but they, too, have an elevator and I can read there. I am proposing to begin there again about October 15th. I will not live long enough to complete the book. I was 73 on August 25th, but if I can hold on for 6 months longer, even as I am (I have 'let down' mentally, I think, a good deal and am on the watch for senility, as are both Laura and a medical friend of mine), I should be able to complete Section 3 thereof—'The Place of Origin of Yellow Fever'. If I can finish this rightly and finally, so that no one else will have to repeat my research, it will content me and be worth doing. The next man can then begin where I left off.

'It is not only with past things I have been occupied, however, I am consultant for the I. H. B. in all matters connected with Yellow Fever work. You know they have undertaken a campaign to eliminate, if possible, this infection from the earth. This is a magnificent conception and, while I will not live to see it done, yet there is a fair prospect of its success, and I thank God and am proud that I have had a hand in its inception and have borne my part in the work of its institution. But for the problems that Africa sets us, I would have written 'certainty' in place of 'fair prospect' above. I offered and wanted (recommended myself) to take charge of the work in West Africa, when I got back from South America in 1922, but was not accepted on account of my physical condition. I judge that it would have killed me, but, if I could have had 12 months' life there, or even 9 months', it would have been worth two men's lives. However, I can still help a little, especially since I have quizzed old Sir James Fowler Stepbins, Alfred, Horne and Le Fann (all West Coast of Africa men) at Kingston. I would, however, give everything I have, except my immortal soul, if I could spend the next 3, or even 2 years, in the Gulf of Guinea—from the Gold Coast to the Mouth of The Congo.

'I am very ungrateful, however; a man who has been able to do field work to within 21 days of his 72nd birthday, and work of some value, though less after his 73rd, surely cannot complain that the Good Lord has not given him time enough on earth to do all required of him, or all that he could claim that he had a right to do, and *I am* thankful and grateful.

'One thing only: I have the highest respect for the late David, born of Jesse, as a poet and a pious one, but he is all wrong when he says that a man's life after 70 is 'labor and sorrow.' I confess that I have been handicapped, since 67, by a sano-iliac relaxation, and, since 72, by my heart. Yet, leaving out three months and a half when I lay with a raised part of the bed and in pain from time to time, there have been few hours of the day—six days a week—that I did not fill with something interesting and sometimes useful. I have no kick coming, except against Washington landlords. I pay $175.00 for this apartment, four rooms, unfurnished, of which, I suppose, $75.00 is for the elevator, as I paid nearly $100.00 for the previous one. If I am living

after Section 3 is finished, I will leave Washington and go to Charlottesville, or some such place. At present I must have access to the Congressional Library.

'The Rockefeller people tell me I should have begun the History earlier. I could not have done so and cleaned the West Coast of South America, Peru and Ecuador, of yellow fever. My fundamental error was in being born in 1851 instead of 1872. This, alas, was irremediable.

'I am. however, content in the life I have had, and thank God for the opportunities and the inclination he gave me to do work useful to other men.

'This is rather a crazy letter, and you will think I am alittle senile. It is surely garrulous enough, but I have not written to an old friend for so long, that this should be a partial excuse for it.

'Commend me to Mrs. Baker and to Mrs. Waller, that was my little 'Miss Baker' (Helen was her name), and to Gwathmey and to old Feild. Take much love to yourself, whom I have always held as especially my four-fold friend—nay, friend with a capital F.

Very sincerely your friend,

H. R. Carter.

'To paraphrase a much greater man, 'You see how long a letter I have written you with my own hand.' I really did not intend to write such a long letter and, here, ask for forgiveness.

H. R. C.' "

Following the above papers and remarks, the Norfolk County Medical Society adopted the following preamble and resolutions:

It is with real sorrow that we learn of the death of this great man—scientist, soldier and physician of profound ability. Especially was he learned in the line of Public Health work in which he is too well known to need further comment. Such men are rare indeed. He combined qualities of virtue and worth, and unselfishness should be put at the head of them.

In his desire to serve and to bring out the truth, he utterly forgot self and knew only to live a life for others, little knowing or caring what it cost of personal sacrifice. He had the keenest insight into a given difficult problem put before him of any physician we were ever thrown with unless, perhaps, it was Dr. Osler.

Lastly, a description of Dr. Carter might be summed up by saying that he was a great man with a large heart and an expansive brain.

He thought only of high and noble things, for he was too big even to consider the small and ignoble ones. God was his guide and comforter, and he turned to Him always when in need of help. Surely those of us who knew him best knew what his faith was, and how often he was called upon to exercise it, for surely this godly and simple man had his dark and sad hours.

"Now the laborer's task is o'er;
Now the battle day is past;
Now upon the farther shore
Lands the voyager at last.
Father, in thy gracious keeping
Leave we now thy servant sleeping."

The memorial meeting adopted the following:

Resolved, That in the death of such a man, the whole world is the loser, his associates a faithful and valued friend, his profession and the people at large a power of strength almost irreparable, and his family a loving guide and comforter.

Resolved, further, that we make mention of him in our minutes, and that a copy of these resolutions be sent his daughter and published in the *Virginia Medical Monthly*.

Proceedings of Societies

The Southside Virginia Medical Association

Held its regular quarterly meeting in the new Hotel Wyanoke, in Farmville, on June 8th, with a large attendance. A very interesting program was rendered and all papers were freely discussed. The visiting doctors were given a luncheon at the home of Dr. T. G. Hardy. The meeting adjourned to meet in Petersburg on the second Tuesday in September. Dr. F. C. Rinker, Norfolk, is president, and Dr. R. L. Raiford, Sedley, secretary

The Nelson County Medical and Surgical Society

Met at Lovingston, Monday, May 24th. Dr. D. C. Wills, the president, presided. It was decided that the society would meet hereafter at Shipman, on the second Tuesdays in May, July, September and November.

Several resolutions of interest to the local profession were passed. One of interest to the public was a resolution commending Dr. W. M. Tunstall to the Governor for appointment to the Board of Visitors of the University of Virginia. After an informal discussion of interesting cases, the Society adjourned to meet at the New Shipman Hotel, Tuesday, July 13th, at 11 A. M. Those present were: Doctors Wills, Kidd, Tunstall, Meeks, Everett, Randolph and Thaxton.

J. F. Thaxton, *Secretary*.

The Norfolk County Medical Society,

At its annual meeting on June 7th, elected Dr. J. Warren White president, and Dr. N. G. Wilson vice-president for the ensuing year. Dr. Lockburn B. Scott was re-elected secretary-treasurer. All three officers are of Norfolk City.

Correspondence

Dr. Brickner's Article on "Attenuated Bone Infections."

New York, N. Y.
June 1, 1926.

To the Editor:

Among the "Original Communications" in the May, 1926 issue of the Virginia Medical Monthly is an article, page 115, on Bone Infections published as "By" Dr. Alonzo Myers, Charlotte, N. C. With the exception of two interpolated paragraphs on page 116, the entire article is taken bodily from a paper I read before the American Medical Association last year, which appeared in the *Journal of the A. M. A.*, December 5, 1925, and of which I enclose a marked reprint for your comparison. My opinions, my methods and even some of the cases I referred to, appear in this article as though they were Dr. Myers' (in one of these cases the sex was deliberately changed but not another detail of the description).

The two interpolated paragraphs above referred to are taken bodily from Dr. Fenwick Beekman's discussion of my paper, which also appeared in the *Journal of the A. M. A.*, December 5, 1925, p. 1787. Cases referred to by Dr. Beekman are made to appear in the Virginia Medical Monthly as though they were cases of Dr. Myers' (the reference to Bellevue Hospital being omitted).

From the beginning to the end of this article published under the name of Dr. Myers, the only lines that are original are the half dozen on page 116, in which it is stated that he served thirty-four months under Dr. Joseph Blake in the French-American Orthopedic Hospital in Paris, and in which it is intimated that the matter following this statement bears upon methods employed by Dr. Blake.

While all the rest of the article is copied almost verbatim from my published paper and Dr. Beekman's published discussion, a few changes in phraseology are made here and there—which quite precludes the possibility of any defense that it was intended to quote us. Nevertheless, I am sending a copy of this letter to Dr. Myers in order to give him an opportunity to make any possible explanation before I take further steps in this matter.

In fairness to yourself and for the sake of your Journal you will, I presume, publish this letter, or the substance thereof, in your next issue. Will you kindly send me a marked copy.

Walter M. Brickner.

A comparison of the article, by Walter M. Brickner, M. D., of New York, entitled "Attenuated Bone Infections," published in *The Journal of the American Medical Association*, December 5, 1925, page 1782, with the paper published by the Virginia Medical Monthly, May, 1926, page 115, entitled "Bone Infections," by Alonzo Myers, M. D., F. A. C. S., Charlotte, N. C., shows the most astonishing reproduction of a large proportion of Dr. Brickner's paper by Dr. Myers, with no sign of credit or acknowledgment to Dr. Brickner. The literal use of Dr. Brickner's words, paragraph by paragraph, with only slight modification, is an action of serious reflection upon the journal of the Medical Society of Virginia and its readers, as well as a flagrant misappropriation of Dr. Brickner's labors and published contributions. The paper submitted by Dr. Myers, although it had been typewritten, practically reproduced Dr. Brickner's article, but gave him no credit whatever as its author.

Dr. Myers, after receiving copies of letters sent the Virginia Medical Monthly by Dr. Brickner, calling attention to this breech of ethics, submits an explanation, which, to say the least shows that Dr. Myers is wanting in the high obligation that an author owes to the publisher and to the reader. He apparently took Dr. Brickner's article in *The Journal of the American Medical Association* and scribbled obscure notations in pencil on the margins, had the article typed and sent to this journal as original. According to Dr. Myers, the stenographer was at fault. The "proof," returned to the Virginia Medical Monthly by Dr. Myers, however, gave no evidence that the material submitted was written by another, and was marked "O.K." and signed "Alonzo Myers, 4/28/26."

The Virginia Medical Monthly regrets that it is necessary to make this public condemnation of Dr. Myers' conduct. To remain indifferent or silent, after becoming cognizant of such action, would make us as guilty of misconduct as we feel Dr. Myers has been.—(*Ed.*)

In order that our readers may see for themselves the wholesale misue of Dr. Brickner's article, we give photostats of several paragraphs.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

SATURDAY, DECEMBER 5, 1925

ATTENUATED BONE INFECTIONS

CONSIDERATIONS IN THE TREATMENT OF OSTEOMYELITIS *

WALTER M. BRICKNER, M.D.
Attending Surgeon, Hospital for Joint Diseases and Broad Street Hospital, Associate Surgeon, Mount Sinai Hospital
NEW YORK

* * *

The products of pyogenic infection of a bone are: suppuration, periostitis, bone destruction and bone production.

New bone production, usually with increased density and thickening, is a reparative, reconstructive process. It requires no treatment, except in efforts to preserve bone length and, sometimes, to correct deformity.

Periostitis in itself also rarely demands any surgical attack. It is a part of the inflammatory process, and it subsides with the subsidence of the bone infection.

Bone destruction is the important pathologic process in chronic osteomyelitis—a necrosis that goes on, often over a period of years, to the production of sequestrums of various sizes. This necrosis is associated with, and is the essential cause of, continued suppuration and, often, sinus formation. When these sequestrums are extruded or removed, the sinuses usually close and the suppuration ceases completely, unless some undetached bone is still undergoing necrosis, or until the attenuated infection in the bone initiates a later cycle of necrosis and sequestrum formation. The recognition of this relationship between bone necrosis and suppuration, in *chronic* osteomyelitis, establishes, it seems to me, two important principles in its surgical therapy:

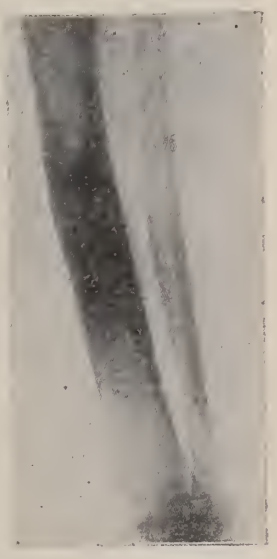


Fig. 4 (Case 4).—Chronic medullary abscess of the tibia, causing pain and soft-part swelling, three years after healing of a compound fracture. The centripetal growth of compact bone invading the medullary cavity may be noted.

The first of these is that one should wait until a sequestrum has actually formed before operating on the bone. One should provide, if need be, adequate drainage through the soft parts; but if there is no actual sequestrum present, he should delay further procedure until it has developed. In such cases roentgenography at intervals is, of course, very helpful; in most instances the number, size and location of sequestrums are thus revealed. To chisel away more or less necrotic bone before there is a complete sequestration is not a good practice, though a common one; it is an operation in which, in the nature of things, one does too much or too little.

The second principle, also more honored in the breach than in the observance, is to content oneself, for the time being, at any rate, with the removal of the offending sequestrum or sequestrums. Very often, *in spite of overhanging bone,* this may be all that is necessary to effect not only cessation of suppuration but also definitive healing.

* * *

Virginia Medical Monthly

Vol. 53. MAY, 1926 No. 2

BONE INFECTIONS.

By ALONZO MYERS, M. D., F. A. C. S., Charlotte, N. C.

The results of pyogenic infection of a bone are:

1. New bone production, usually with increased density and thickening. This is a reparative, reconstructive process. It requires no treatment, except in efforts to preserve bone length and, sometimes, to correct deformity.

2. Periostitis. This rarely demands any surgical treatment. It is a part of the inflammatory process, and subsides with the subsidence of the bone infection.

3. Bone destruction and suppuration are the important pathologic processes in chronic osteomyelitis—a necrosis that goes on, often over a period of years, to the production of sequestra of various sizes. This necrosis is associated with, and is the essential cause of, continued suppuration and, often, sinus formation. When these sequestra are extruded or removed, the sinuses usually close and the suppuration ceases completely, unless some undetached bone is still undergoing necrosis, or until the attenuated infection in the bone initiates a later cycle of necrosis and sequestrum formation.

The relationship between bone necrosis and suppuration establishes two important principles in the surgical care:

The first of these is that one should wait until a sequestrum has actually formed before operating on the bone. One should provide, if necessary, adequate drainage through the soft parts; but if there is no actual sequestrum present, he should delay further procedure and check sequestra development by means of the X-ray. To chisel away more or less necrotic bone before there is a complete sequestration is not a good practice, though a common one.

The second principle is to content one's self, for the time being, at any rate, with the removal of the offending sequestrum or sequestra. This may be all that is necessary to effect not only cessation of suppuration but also definite healing.

mined and until the field is more nearly aseptic. To effect cessation of suppuration, the removal of the dead bone is much more important than the removal of overlying healthy bone. In spite of preconceived notions, it is by no means always necessary to remove bone over the length of a suppurative process (to which I shall advert again), and probably all surgeons have sometimes seen bone cavities heal over, after sequestrectomy, without removal of their sides, and have even occasionally observed the phenomenon of a large bone defect healing by granulations.

I quite appreciate, and I too have often yielded to, the temptation to perform an extensive osteotomy in these cases of chronic osteomyelitis with sinuses, suppuration and one or more sequestrums. One hopes by chiseling and scraping away to a solid column of so-called healthy bone to eradicate the disease process at once and to effect a prompt and permanent wound closure. How often such hopes are disappointed! Every chisel stroke, every scrape of the curet is an invitation to fresh sequestrum formation; and the extensive osteotomy often serves to delay rather than to hasten the cure.

I quite appreciate, too, the importance of the shallow bone trough to afford an opportunity for contacting with the overlying soft parts. This is an accepted mechanical principle, which has, however, been made a fetish. Too often, I think, surgeons insist on at once removing, often extensively, ledges of healthy bone in cases of chronic osteomyelitis, when a simple sequestrectomy might serve as a primary operation. I believe it is better to delay the plastic osteotomy until its necessity and its extent are more definitely deter-

* * *

As an intern I was taught, and for several years I continued, to chisel away the cortex and cancellus over the full extent of the medullary suppuration (often the entire length of the diaphysis) and then vigorously to scrape out the medullary cavity, thus taking away its surrounding cancellous bone. I am sure that the latter step, especially, is a very bad practice. The marrow pus can be adequately removed by far gentler means. The cancellus is important for bone regeneration and should be preserved as far as possible. As T. Wingate Todd[4] of Cleveland has said, "Cancellous tissue must be conservatively dealt with and under no circumstances removed entirely. It is the bone abscesses which are 'thoroughly' curetted out so that only the compact shell remains which result most disastrously from the point of view of healing. Especially is this the case in those instances in which pure carbolic swabbing is used to finish the destructive work of the curette." John Fraser[5] of Edinburgh also protests against the common practice of scraping out the bone in acute osteomyelitis.[6]

I have, indeed, been getting away from free osteotomy in acute osteomyelitis. I believe that one can accomplish his purpose equally by making drill holes of sufficient size and number, through which the medullaris can be drained. That intervening corticalis may necrose is not important; extensive necrosis may also occur after the free osteotomy. In a case of fulminating osteomyelitis of the humerus and staphylococcemia in a little girl, I made a drill hole at the upper and one at the lower end of the diaphysis, and removed the suppurating medulla by means of a strip of gauze passed on a probe from one opening to the other. The child made an excellent recovery. A sequestrum formed at each drill site, and when these were removed definitive healing took place. As compared with osteotomy the full length of the humerus, this child was spared prolonged hospitalization, extensive scarring

4. Todd, T. W.: The Rôle of Cancellous Tissue in Healing Bone, Ann. Surg. **72**: 452 (Oct.) 1920.
5. Fraser, John: Discussion on Acute Osteomyelitis, Brit. M. J. **2**: 605 (Oct.) 1924.
6. In passing, it is of interest to note that Fraser expresses the opinion that the cases of acute osteomyelitis in children that subside spontaneously are almost invariably instances of pneumococcus infection.

* * *

We too often yield to the temptation to perform an extensive osteotomy in these cases of chronic osteomyelitis. One hopes by chiseling and scraping away to a solid column of so-called healthy bone to eradicate the disease process at once and to effect a prompt and permanent wound closure, but, instead, the trauma is inviting fresh sequestrum formation.

The importance of the shallow bone trough to afford an opportunity for contact with the overlying soft parts, is an accepted mechanical principle, which has, however, often made necessary the removal of extensive ledges of healthy bone in cases of chronic osteomyelitis, when a simple sequestrectomy might have served as a primary operation. I believe it is better to delay the plastic osteotomy until its necessity and its extent are more definitely determined, and until the field is more nearly aseptic. To effect cessation of suppuration, the removal of the dead bone is much more important than the removal of overlying healthy bone. In spite of preconceived notions, it is by no means necessary to remove bone over the length of a suppurative process, and probably all surgeons have sometimes seen bone cavities heal over after sequestrectomy, without removal of their sides, and have even occasionally observed the phenomenon of a large bone defect healing by granulations.

* * *

As an interne I was taught in acute osteomyelitis to chisel away the cortex and cancellus over the full extent of the medullary suppuration (often the entire length of the diaphysis) and then vigorously to scrape out the medullary cavity, thus taking away its surrounding cancellous bone. I am sure that the latter step, especially, is a very bad practice. The marrow pus can be adequately removed by far gentler means. The cancellus is important for bone regeneration and should be preserved as far as possible. As T. Wingate Todd, of Cleveland, has said, "Cancellous tissue must be conservatively dealt with and under no circumstances removed entirely. It is the bone abscesses which are 'thoroughly' curetted out so that only the compact shell remains, which results most disastrously from the point of view of healing. Especially is this the case in those instances in which pure carbolic swabbing is used to finish the destructive work of the curette."

I believe that one can accomplish his purpose equally by making drill holes of sufficient size and number, through which the medullaris can be drained. That intervening corticalis may necrose is not important; extensive necrosis may also occur after the free osteotomy. In a case of fulminating osteomyelitis of the humerus and staphylococcemia in a little girl, I made a drill hole at the upper and one at the lower end of the diaphysis, and removed the suppurating medulla by means of a strip of gauze passed on a probe from one opening to the other. The child made an excellent recovery. A sequestrum formed at each drill site, and when these were removed definite healing took place. As compared with osteotomy the full length of the humerus, this child was spared prolonged hospitalization, extensive scarring and, probably, deformity. I confess that, especially when the periosteum has been stripped up by pus, I sometimes yield to the temptation to remove as much of the presenting bone substance as is suppurating. I think, however, that this is not necessary if drainage is provided by multiple trephination; the bone that will not survive will exfoliate spontaneously.

Chronic bone abscesses, central or cortical, are often, if not usually, residual from an osteomyelitis active even twenty or more years before the abscess makes its presence known. In Figure 5, however, are roentgenograms of three consecutive cases of solitary, chronic, sterile, cortical abscess of the femur in young women, which I operated on within the past year in my service at the

7. Brickner, W. M.: Chronic Medullary Abscess of the Long Bones: Its Clinical and Roentgenographic Features: Its Treatment by Simple Trephining, Ann. Surg. **65**: 483 (April) 1917.

Hospital for Joint Diseases, and in none of which was there any antecedent osteomyelitis or other discovered or remembered infection. In the case illustrated in Figure 5 *A*, the pain began a few weeks after fall on the outer side of the thigh. Figure 6 is the roentgenogram of the hip of a boy with the roentgen-ray and clinical signs of a pea-sized bone abscess in the intertrochanteric region, of one year's duration, developing two years after a trauma (fracture of the margin of the acetabulum); a small area of softened tissue was found, surrounded by dense bone, but there was no pus. This softened area in the femur showed, microscopically, atrophic bone trabeculae, osteoclasts, granulation tissue and much thickened blood vessels—a circumscribed nonsuppurative osteomyelitis.

It is difficult to decide, sometimes, whether a small chronic abscess is cortical or subperiosteal in origin. Whether only a drop or two of pus in the cortex or several drams in the medullary canal, chronic bone abscesses have a uniform symptomatology: persistent pain (often radiating and mistreated for "neuritis" and "rheumatism") and distinct localized bone tenderness. The condition is usually afebrile but sometimes subfebrile (100, even 101). As I pointed out in the article to which I referred, and in two later publications,[8] chronic bone abscesses tend to become sterile, that is to say, the organisms in the pus (usually staphylococci) are dead or much attenuated. The recognition of this phenomenon led me to devise the treatment of these nonperforating abscesses, large or small, that I have elsewhere described; namely, by simple evacuation through a small drill hole:

With the patient under nitrous oxid narcosis, an incision about 2 inches long is made through the skin and (except, for example, over the inner surface of the tibia) the underlying muscle is split, or retracted, to expose the periosteum. Through this and into the bone, at a point determined by roentgenogram or by the level of maximum tenderness, a drill from one-eighth inch to one-fourth inch in diameter is driven deeply enough to permit the escape of pus. If, perchance, the situation of a small abscess has not been estimated accurately enough for it to be thus tapped by the first opening, other drill holes can be made with little damage to the bone, or the surgeon may defer the completion of the operation to determine roentgenographically the relative levels of the abscess and his first drill hole. With the escape of pus the drill is removed and nothing else is introduced into the bone—no probe, curet, or gauze packing. A culture is made from the pus to determine what, if any, living organism it contains. A smear is also stained and examined at once. (Often the smear shows a few staphylococci and the culture remains sterile.) A small drain of folded rubber dam is laid in the soft parts down to, but not into, the opening in the bone, and the wound is otherwise closed by sutures. A simple gauze dressing completes the operation. The patient is immediately relieved of his pain. The drain is to provide for any further escape of pus from the bone, and to act as a safety valve in case of possible suppuration in the bone cavity or the soft parts, caused by dormant organisms awakened to activity. It is removed, usually without replacement, in three or four days; i. e., as soon as discharge has practically ceased. The [illegible] soft parts is then allowed to close and

***

***

Chronic bone abscesses, central or cortical, are often, if not usually, residual from an osteomyelitis active even twenty or more years before the abscess makes its presence known. X-ray in a case which showed solitary, chronic, sterile, cortical abscess of the femur in a young woman whom I operated on within the past year, gave no evidence of any antecedent osteomyelitis or other discovered or remembered infection. In another case, the hip of a woman with the X-ray and clinical signs of a pea-sized bone abscess in the intertrochanteric region, of a month's duration, developing eighteen months after a trauma (fracture of the margin of the acetabulum), a small area of softened tissue was found, surrounded by dense bone, but there was no pus. Pathological report showed a circumscribed non-suppurative osteomyelitis.

It is sometimes difficult to decide whether a small chronic abscess is cortical or subperiosteal in origin. Whether only a drop or two of pus is found in the cortex or several drams in the medullary canal, chronic bone abscesses have a uniform symptomatology,—persistent pain (often radiating and mistreated for "neuritis" and "rheumatism") and distinct localized bone tenderness. The condition is usually afebrile but sometimes febrile (100, even 101). Chronic bone abscesses tend to become sterile, that is to say, the organisms in the pus (usually staphylococci) are dead or much attenuated. The recognition of this phenomenon has led to treatment of these non-perforating abscesses, large or small, by simple evacuation through a small drill hole.

With the patient under an anesthetic, preferably nitrous oxid, an incision ordinarily about two inches in length is made through the skin and the underlying muscle is split, or retracted, to expose the periosteum. Through this and into the bone, at a point determined by X-ray or by the level of maximum tenderness, a drill from one-eighth inch to one-fourth inch in diameter is driven deeply enough to permit the escape of pus. If, perchance, the situation of a small abscess has not been estimated accurately enough for it to be thus tapped by the first opening, other drill holes can be made with little damage to the bone, or the surgeon may defer the completion of the operation to determine roentgenographically the relative levels of the abscess and his first drill hole. With the escape of pus, the drill is removed and nothing else is introduced into the bone, no probe, curet, or gauze packing. A culture is made from the pus, to determine what, if any, living organism it contains. A smear is also obtained and examined at once. (Often the smear shows a few staphylococci and the culture remains sterile). A small drain of folded rubber dam is laid in the soft parts down to, but not into, the opening in the bone, and the wound is otherwise closed by sutures. A simple gauze dressing completes the operation. The patient is immediately relieved of his pain. The drain is to provide for any further escape of pus from the bone, and to act as a safety valve in case of possible suppuration in the bone cavity or the soft parts, caused by dormant organisms awakened to activity. It is removed, usually without replacement, in three or four days,

DR. MYERS' EXPLANATION

Charlotte, North Carolina,
June 3, 1926.

DR. WALTER M. BRICKNER, M. D., F. A. C. S.,
151 CENTRAL PARK WEST,
NEW YORK, N. Y.

DEAR DOCTOR BRICKNER:

In reply to your letter to Dr. Alex. G. Brown, Jr., Editor, VIRGINIA MEDICAL MONTHLY, Richmond, Va., which you kindly sent me a copy referring to an article published in the VIRGINIA MEDICAL JOURNAL, May, 1926, issue.

In making my explanations I first wish to beg of you to believe me as sincere and honest.

I have not seen the article in the Journal as yet but there is no doubt considerable error typographically and on my part before its publication. First the article should have had as the heading and in the first paragraph, "A review and quotations to emphasize an article and discussions of a paper on Bone Infection by Dr. Walter M. Brickner, 151 Central Park West, New York, appearing in the *American Medical Journal*, December 5, 1925. The subject is so well dealt with in the practice and in the article I think it deserves this consideration."

Dr. Brickner, I assure you the article was not intended as an original on my part but more to review emphasis or abstract your work of which I thoroughly agree, and which I intended to infer bares out my experience in France and here.

Another apology I wish to make is I had a rather inexperienced stenographer for that kind of work at the time and I remember I had some difficulty in getting the notes and paper together which was done hurriedly in response to a request from the VIRGINIA MEDICAL JOURNAL for something from me for that issue and which was mailed during my absence from town.

I am sending Dr. Brown a copy of this letter and shall be only too glad to do anything else you may request of me.

Trusting that you will accept this explanation and let me hear from you. Again assuring you of my sincere regrets and desire to correct it and shall appreciate any suggestions or requests you wish me to follow.

Believe me to be,

Fraternally and Sincerely,
ALONZO MYERS, M. D., F. A. C. S.

Charlotte, North Carolina,
June 8, 1926.

DR. WALTER M. BRICKNER, M. D., F. A. C. S.,
151 CENTRAL PARK WEST,
NEW YORK, N. Y.

DEAR DOCTOR BRICKNER:

Supplementing my letter of June 3rd in reference to the article on Bone Infection appearing in the VIRGINIA MEDICAL MONTHLY which I have just read.

When I first read the article in the *A. M. A. Journal* some time ago I made some margin notes on similar cases and some that should have been treated likewise, and later when I reviewed the article for the VIRGINIA MONTHLY, I made some additional notes on the margin where space permitted and other notes on separate slips of paper attached and at the same time marking "Omit" of the former notes which was not done but instead omitted that part of the original, also some of the attached slips.

The typist was confused, I remember at the time in the pronoun she should use in referring to Dr. Brickner and I told her to use the first person all through just as though I was writing it in order, I thought, to make it plain to her that I was quoting Dr. Brickner and the other Doctors.

At the beginning I started out to condense the article which accounts for the change of phraseology.

Again I want to assure you this was an article of unusual interest to me, and I was anxious to get it before our Doctors in this section.

Hope this additional explanation will give you a better understanding and that I may have a reply from you.

Yours very truly,
ALONZO MYERS, M. D.

Copy sent to Dr. Alex. Brown, Jr., Editor, VIRGINIA MEDICAL MONTHLY, Richmond, Va.

'Taint what we have
But what we give
'Taint where we are
But how we live
'Taint what we do
But how we do it
That makes this life
Worth going through it.
—*Selected.*

Womans Auxiliary

Advantages of Organized Effort Among the Women.

At the request of the officers of the Auxiliary, this space has been set aside for communications from them regarding matters of interest, both to the profession and to the women members of their families.

All communications should be addressed to Mrs. E. F. Truitt, Secretary, Westover Avenue, Norfolk, Virginia.

The True Story of Medicine

The public should be acquainted with what medicine is and what the profession has done and is doing, and there are no people who are better suited to teach them than the members of the Woman's Auxiliary in the various sections.

In these practical times it seems a shame that the people have to get their ideas along these lines largely from the flaming advertisements of the "Quacks" and from more or less sensational stories in the public press.

Sickness, doctors and hospitals are a constant subject of unreliable talk and gossip.

The members of the Woman's Auxiliary can do an enormous amount of good by telling the "Ture Story of Medicine" to the people of all classes, and giving them the proper conception of this vital subject.

The people should be told of the extensive educational requirements, covering several years; of the necessary constant and unremitting study; of the results of the profession's unselfish endeavor in preventive work, greatly lessening the ravages of communicable diseases; of the great advances in diagnosis and treatment; and of the achievements in lessening suffering and markedly prolonging human life.

Notwithstanding the strides made by the profession in recent years, the people are still, only too often, seeking advice from uneducated irregulars. This is due to lack of information on health matters and to misleading advertising.

The time has come to speak plainly on such subjects and members of the Woman's Auxiliaries are qualified to speak and act.

Roof Garden Party for Medical Society

Members of the Norfolk County Medical Society and their guests were tendered a reception and served refreshments on the roof garden of the Medical Arts Building early in June, by the Woman's Auxiliary to the society.

While the doctors were in session in the Medical Hall, their wives gathered outside on the Roof Garden, with the purpose of becoming better acquainted and to meet their new President, Mrs. Burnley Lankford, who there offered the services of the Auxiliary to the Medical Society.

The entertainment program came after the regular business meeting of the medical organization. Dr. C. C. Coleman, of Richmond, addressed the doctors on "Brain Tumor." The meeting was well attended and the roof garden program proved very enjoyable.

The Truth About Medicine

In addition to the articles enumerated in our letter of April 30th, the following have been accepted:

Hoffman-LaRoche Chemical Works
  Isacen.
Schering & Glatz
  Digitalis Dispert
    Digitalis Dispert Tablets 0.08 Gm.
Swan-Myers Co.
  Iodeikon Capsules—Swan-Myers.

NEW AND NON-OFFICIAL REMEDIES

Pituitary Body Anterior Lobe Desiccated—Mulford. The anterior lobe of the pituitary body of cattle, separated, dried and powdered. For a discussion of the actions, uses and dosage, see Pituitary Gland, New and Non-official Remedies, 1925, p. 260. This product is also supplied in 2½ grain and 5 grain tablets. H. K. Mulford Co., Philadelphia.

Sterile Solution of Anterior Lobe Pituitary Extract—Mulford. An extract of the anterior lobe of the pituitary body of cattle. Each c.c. represents the extractive of 0.2 Gm. of fresh substance. For a discussion of the actions and uses, see Pituitary Gland, New and Non-official Remedies, 1925, p. 260. The preparation is marketed in 1 c.c. ampules. H. K. Mulford Co., Philadelphia.

Pituitary Solution Surgical—Wilson. An extract of the posterior lobe of the pituitary body of cattle. It is standardized to have twice the strength of solution of pituitary, U. S. P. For a discussion of the actions, uses and dosages, see Pituitary Gland, New and Non-official Remedies, 1925, p. 260. This preparation is marketed in 1 c.c. ampules. Wilson Laboratories, Chicago.

Scarlet Fever Streptocossus Antitoxin Concentrated.—A scarlet fever streptococcus antitoxin (Jour. A. M. A., May 2, 1925, p. 1338), prepared according to the method of Drs. Dick by license of the Scarlet Fever Committee, Inc.

This antitoxin is marketed in packages of one syringe containing 7 c.c. (prophylactic dose), and in packages of one syringe containing 14 c.c. (therapeutic dose). H. K. Mulford Co., Philadelphia.

Corpora Lutea Soluble Extract—P. D. & Co. A solution of an extract of desiccated corpus luteum in physiological solution of sodium chloride, each c.c. containing 0.02 Gm. of soluble extract. For a discussion of the actions and uses, see Ovary, New and

Non-official Remedies, 1925, p. 251. The product is marketed in 1 c.c. ampules. Parke, Davis & Co., Detroit. (Jour. A. M. A., May 8, 1926, p. 1440).

PROPAGANDA FOR REFORM

Bismuth Compounds in Antisyphilitic Therapy.—The usefulness of bismuth in the treatment of syphilis seems to be assured, but there is pressing need of dependable evidence as to the sort of compound of the element that is most likely to prove useful. In a study sponsored by the Therapeutic Research Committee of the Council on Pharmacy and Chemistry, Cole, Farmer and Miskdjian have demonstrated anew that the administration of suspensions of finely divided metallic bismuth is inadvisable because such preparations remain unabsorbed for long periods. This warns against the danger of cumulative action of a toxic substance. The study did not bear out the contention of some writers that insoluble salts of bismuth must be injected twice weekly to obtain a gradual, even absorption of the metal. If bismuth salicylate and potassium bismuth tartrate are injected intragluteally once a week they are not likely to give rise to cumulative action, but patients should be observed closely. When suitable preparations are cautiously employed, undesirable complications can for the most part be avoided. Cole regards bismuth as a valuable drug in the treatment of syphilis, but he urges a conservative attitude until more evidence as to the precise effect of the drug is available. (Jour. A. M. A., May 1, 1926, p. 1352).

Steere's Elixir Aspirin Compound, Steere's Elixir Ammonium Salicylate, Nelson Elixir Ovarans, and Elixir Digitalin Compound Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry has found the following products of the American Laboratories, Inc., unacceptable for New and Nonofficial Remedies: *Steere's Elixir Aspirin Compound*, claimed to contain in each teaspoonful, "Aspirin 2½ Gr., Caffeine Citrated ½ Gr., Rhubarb 1 Gr.," and 50 per cent of alcobol, was found unacceptable for New and Nonofficial Remedies, because it does not have the composition claimed; because the name is not descriptive of its composition; and because it is irrational to administer a mixture containing acetylsalicylic acid, or its decomposition products, alcohol, caffeine and rhubarb in fixed proportions. *Steere's Elixir Ammonium Salicylate*, claimed to represent in each teaspoonful "Ammonium Salicylate 2½ Grs., Caffeine Alkaloid ¼ Gr., Rhubarb 1 Gr.", was found unacceptable for New and Non-official Remedies, because the name is misleading, in that it does not correctly declare the potent ingredients; because the recommendations for its use are unwarranted and their inclusion on the label may lead to its indiscriminate use by the laity; and because the routine administration of a mixture of a salicylate, caffeine and rhubarb in fixed proportions is not in the interest of rational therapy. *Nelson Elixir Ovarans*, stated to be "A Pleasant and Palatable Preparation of Viburnum Prunifolium, in Combination with Symplocarpus Foet., Cinnamon, etc., with Aromatics," was found unacceptable for New and Non-official Remedies, because it is a mixture of indefinite composition sold under a non-informing name and with claims that are unwarranted and likely to lead to its ill-advised use by the public. *Elixir Digitalin Compound* claimed to contain in each fluidrachm "Digitalin, 1-100 Gr.; Nitroglycerin, 1-100 Gr.; Strychnine Sulphate, 1-50 Gr.", was found unacceptable for New and Non-official Remedies, because its composition is uncertain; because the name is not descriptive of its composition; and because it is an irrational combination marketed with claims that are unwarranted. (Jour. A. M. A., May 1, 1926, p. 1384).

The Therapeutic Use of Oxygen.—There is a rational basis for the administration of oxygen in certain conditions, but it does not consist in the exhibition of a few whiffs of the gas through a funnel held in front of a patient's face. Ordinarily, the inspired air contains approximately 21 per cent of oxygen. It requires a decided increment of the latter in the air intake to produce effective gains by diffusion through the lungs into the pulmonary capillaries. To be of therapeutic potency, oxygen should be administered at an optimal concentration, which has lately been proposed at 40 per cent of the inspired air. Apparatus has been developed which insures the inspiration of the high concentration of oxygen which is desired. (Jour. A. M. A., May 8, 1926, p. 1455).

Proprietary Mixtures Syndicate.—Kansas City is, or was, the home of Proprietary Mixtures Syndicate, Inc., and Yonga Yoga Scientist, Inc., two imposingly named pieces of quackery operated by one Thomas W. Douglas and his wife, Maye. Douglas' scheme was to sell through the mails a number of "patent medicines," which Douglas called "Formulations." His method of diagnosis was to require the birth date and from this he pretended to be able to determine what ailed the victim. The post office authorities investigated the scheme and on April 17, 1926, a fraud order was issued against Proprietary Mixtures Syndicate, Inc., Mrs. M. Douglas, Thomas Douglas and Yonga Yoga Scientist, Inc. The evidence showed that Mrs. Douglas had no medical training, but that Mr. Douglas claimed to have studied certain branches of medicine in this country and abroad. Douglas employed no physician, pharmacist or chemist, all the work being done by himself and wife at their home. The medicines are put up in part by Parke, Davis & Co., and one Hunter was stated to mix "different strengtbs" of the medicines used. The composition of the medicines was not brought out at the trial. Many of the diseases which Douglas undertook to treat were of a serious nature. (Jour. A. M. A., May 15, 1926, p. 1566).

Unwarranted Therapeutic Hopes.—Although drastic restrictions in diet no longer characterize the management of diabetes, the problem of suitable foods for diabetic patients still looms large. Side by side with the exclusion of foods that promote either glycosuria or ketosis or both, has occurred the search for palatable energy yielding food substances that will enrich the dietary of the diabetic patient without giving rise to untoward consequences. The proposal for the use of intarvin (glyceryl margarate), represented an attempt to furnish a fat not likely to promote ketosis in its metabolism. There have been varied efforts to discover derivatives of the sugars that will not escape oxidative destruction as ordinary carbohydrates do in the diabetic organism. The polysaccharide carbohydrate insulin has been recommended in the past for patients with diabetes, but it is possible that the apparent tolerance of the diabetic patients for insulin bearing foods may be due to actual failure of digestion and absorption of this carbohydrate. In Germany the anhydrosugar glucosane and its polymer, tetraglucosane, have been used in the dietary treatment of diabetes, but recent investigation has shown that large quantities of ingested tetraglucosane are excreted unchanged in the feces. (Jour. A. M. A., May 22, 1926, p. 1626).

Methyl Salicylate.—A Warning. Methyl salicylate in moderate amounts is a powerful poison. While death from the drug has never resulted from its

therapeutic use, instances of untoward effects following accidental or intention self-administration have been reported. Absorption of less than 15 c.c. has repeatedly resulted in death. (Jour. A. M. A., May 22, 1926, p. 1628).

Eksip for Diabetes.—One Mathew Richartz, of New York City, is exploiting the sufferer from diabetes through the sale of a nostrum "Eksip." The advertising slogan for Eksip is: "No More Dieting, No More Starving, Eat and Get Well." Diabetics are urged to write for a booklet entitled "Eat and Get Well," which Richartz sends to any one who asks for it. While the newspaper advertisement leads to the belief that with Eksip no dieting is necessary, in the booklet the victim is urged to avoid foods high in carbohydrates until after Eksip has cured the diabetes. Furthermore, the diabetic is warned after he has purchased the nostrum that he should not abandon the diet to which he has been used. The A. M. A. Chemical Laboratory analyzed Eksip (which comes in tablet form). From this analysis it may be concluded that Eksip contains essentially magnesium carbonate and starch. (Jour. A. M. A., May 22, 1926, p. 1641).

Freak Medical Patents.—The United States Patent Office is apparently unaware that there is such a thing as modern medical knowledge. Patents have been issued for bizarre products and devices of a medical or medicinal nature. These include Perkins tractors, Sanche's Oxydonor, the tape worm trap of Meyers, the "consumption cure" of Serghison and several others. A patent was issued in March, 1921, to Mary McGuire Wilson, for the "Process of and Material for Reducing Fatty Tissue." According to the patent specifications, the Wilson formula for reducing weight is alum, 12 ounces; camphor, 2 ounces; alcohol, 12 fluidounces, and witch hazel, 32 fluidounces. This mixture—which the Patent office considers a new and useful invention—is to be applied to the skin of the "stylish stout" immediately following a hot tub. The stuff is then "whipped or spanked with the fingers to drive the solution into the pores." (Jour. A. M. A., May 29, 1926, p. 1701).

Cresog Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that Cresog (Cresog Laboratories Co., Detroit), is stated to be "composed of a pure glycerine base with the addition of two per cent of 'Pomcresol' (manufactured by Searle and Co., Chicago), plus Bicarbonate of sodium 2%." The label and advertising contain such meaningless statements as: "Derivative of Cresol, also Glycerin and Others." Though the Cresog label admits that the preparation has a phenol coefficient of but 0.1, the preparation is claimed to have "strong germicidal effect." The Council found Cresog unacceptable for New and Non-official Remedies because its composition is indefinite, its name is not descriptive of its composition, the claims are unwarranted, and the recommendations for its use such as may lead the public to place false dependence on it in serious conditions. (Jour. A. M. A., May 29, 1926, p. 1713).

Robes' Anti-Rheumatic Injections Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that Robes' Anti-Rheumatic Injections is stated to contain mercuric chloride, 0.9 mg.; "guaiacum solids," 0.3 mg.; sodium chloride, 0.0066 Gm. per c.c. of 8 per cent alcohol. The action of the "guaiacum solids" is not stated in the advertising or in the information submitted to the Council. The Council found Robes' Anti-Rheumatic Injections unacceptable for New and Non-official Remedies because (1) its composition is indefinite in that no data are given as to the nature of "guaiacum solids"—which alone makes the preparation different from a simple solution of mercuric chloride in alcoholic saline solution; (2) no tests are submitted whereby the "guaiacum solids" can be detected or determined quantitatively; (3) the therapeutic claims are unwarranted in that no evidence is submitted to show that "guaiacum solids" makes the preparation more effective than a simple solution of mercuric chloride or that the latter has any value in "rheumatism;" (4) the amount of the potent ingredients is not declared on the label; (5) the name is objectionable in that it does not indicate clearly the most potent ingredient and is therapeutically suggestive; (6) the trade package circular advertises an unaccepted article; and (7) because it is an unscientific preparation the use of which is detrimental to rational therapy. (Jour. A. M. A , May 29, 1926, p. 1713).

Book Announcements

Edgar's Practice of Obstetrics. For Students and Practitioners of Medicine. By J. CLIFTON EDGAR, Emeritus Professor of Obstetrics and Clinical Midwifery, Cornell University Medical College. Revised by NORRIS W. VAUX. Clinical Professor of Obstetrics, Jefferson Medical College, Philadelphia. SIXTH EDITION. Philadelphia. P. Blakiston's Son and Company, 1912 Walnut Street. 8vo of 779—xvi, pages, with 684 illustrations, including 5 colored plates and 38 figures printed in colors. Cloth. Price $8.00.

Collected Papers of the Mayo Clinic and the Mayo Foundation. Edited by MRS. M. H. MELLISH, H. BURTON LOGIE, M. D., and CHARLOTTE E. EIGEN MANN, B. A. Volume XVII, 1925, Published May, 1926. Philadelphia and London. W. B. Saunders Company. 1926. 8vo of 1,078 pages with 252 illustrations. Cloth. Price $13.00 net.

Pediatrics. By Various Authors. Edited by ISAAC A. ABT, M. D., Professor of Diseases of Children, Northwestern University Medical School, Chicago. Set complete in eight octavo volumes totaling 8,000 pages with 1,500 illustrations, and separate Index Volume free. Now ready—VOLUME VIII, containing 1,102 pages with 388 illustrations and GENERAL INDEX to Volumes I to VIII. Philadelphia and London. W. B. Saunders Company. 1926. Cloth, $10.00 per volume. Sold by subscription.

United Fruit Company. Medical Department. General Offices: Boston, Massachusetts. Fourteenth Annual Report. 1925. 8vo of 320 pages. Paper.

American Relief Administration Bulletin. Series 2, No. 45, April, 1926. American Medical and Sanitary Relief in the Russian Famine, 1921-1923. By HENRY BEEUWKES, M. D., Medical Director, American Relief Administration, Russian Unit. Published by American Relief Administration, Herbert Hoover, Chairman, 42 Broadway, New York, N. Y. Octavo of 128 pages. Paper.

Virginia Medical Monthly

FOUNDED BY LANDON B. EDWARDS, M. D., APRIL, 1874.
OWNED BY THE MEDICAL SOCIETY OF VIRGINIA.
PUBLISHED BY THE PUBLISHING COMMITTEE.
A. G. BROWN, Jr., M. D., Chairman, Richmond, Va.
B. R. TUCKER, M. D., Richmond, Va.
P. W. HOWLE, M. D., Richmond, Va.
E. L. KENDIG, M. D. Victoria, Va.
A. L. GRAY, M. D., Richmond, Va.
ALEX. G. BROWN, Jr., M. D., Editor.
AGNES V. EDWARDS, Business Manager and Secretary-Treasurer.

All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $2.00 per annum in advance.
Single Copies 20c.

Vol. 53. JULY, 1926 No. 4

Editorial

Liver Substance in Treatment.

It is interesting to note the trend of medical thought as investigations proceed. The past two years have been notable, in internal medicine, for its investigations of some of the physiologic, as well as pathologic, problems of the liver. The renewal of activity in scientific research of this organ, both in the domain of its physiologic actions in the body as well as in the field of diseases of the organ itself and its biliary passages, has thrown new light on the organ; its functions, its diseases, and its influence upon diseases in the general body. The action of the liver upon protein metabolism and its elimination; the action of the liver upon blood coloring matter; the action of the liver upon the hemopoietic system; the action of the liver in diseases of the biliary tract, upon pancreatic activity and upon gastric digestion, are but a few phases of the wide influence exerted by the liver in the well-being of the body.

One may well consider, then, a part of this by asking the question: Is liver substance an aid in the treatment of arterial hypertension? This is a question very frequently propounded and it is well considered in a report of the proceedings of the Association of American Physicians (*Jour. A. M. A.*, June 5, 1926, page 1794). Dr. Ralph H. Major's paper, upon "Effects of Hepatic Extracts on Arterial Hypentension," reports: A study of various metaboloids. Guanidine was found to produce a marked sustained rise of blood pressure. Effort was made to relieve hypertension by producing a substance capable of counteracting the guanidine hypertension. Major found liver extract very helpful. Histamine gave different results, so it was necessary to produce pure liver extract free from the histamine and choline content.

Major tried liver extract on patients with hypertension. The response varied with the patients and in the same patient. The results in patients confined to bed were not so satisfactory,—thought to be due to too small doses. The best results were obtained in young persons with hypertension just beginning.

It is interesting to note the discussion and comment upon this paper. Dr. Oppenheimer, of New York, had given pure liver extract, freed from histamine and choline, in the case of essential hypertension, with systolic pressure of 200 or over and a diastolic pressure of 100 or over. He reported some good results with the first lot of preparations, but latterly, "no effect." Dr. McLester, Birmingham, had observed the effect of liver extract on a certain group of cases under forty-five years of age, with early hypertension, and found favorable response. Dr. O'Hare, Boston, stated that at the Peter Bent Brigham Hospital, in use of small doses, the results had been not entirely satisfactory; in two cases out of seventeen there was some effect and in fifteen there was no effect. The fear was expressed by him that the preparation was not absolutely good. Dr. Mosenthal, New York, observed that in two cases out of fifteen cases treated, the results were gratifying: one came to a normal level from 200, and another improved and the symptoms subsided. Mosenthal stated that liver extract, when properly handled, was probably useful. Dr. Major, in closing the discussion, stated that he had been impressed by the relief patients experienced from headache, tinnitus, dizziness, and other disagreeable symptoms. He found that uniform doses gave better results. Then he used a dose sufficient to reduce hypertension, and gave 15,000 units a day as standardized against guanidine.

From the report of a paper and the discussion resulting, one may formulate a tentative reply to the inquiry, whether or not liver extract is useful in hypertension. Certainly, one may say that liver substance therapy offers a new method, a new aid, in the general problem of meeting the dangers of hypertension, if not a fundamental step in removal of etiologic

factors that make up the pathogenesis of this grave arterial condition. A word of caution may be added here, as ever, in commenting on a medical problem as many-sided and complex as this one. The use of liver extract for the relief of hypertension, apparently, has a limited field of action to a special group of cases that may be as amendable to other already used methods, such as: (1) rest in bed, (2) removal of foci of infection, (3) dietary management, (4) elimination.

Pernicious Anemia.

Pernicious anemia was first accurately described in 1855, by Addison. It has baffled every form of treatment; not that occasional success has not been reported, but that no successful therapy has been obtained. One has very little upon which to base a justified expectation of therapeutic improvement in its management, but, nevertheless, what gives promise of progress in the field may be found in an account of papers read, with discussion following, by Drs. George R. Minot and William P. Murphy, Boston, entitled "Observations on Persons with Pernicious Anemia, Partaking of a Special Diet" (clinical aspects), and Drs. Reginald Fitz, William P. Murphy, and Robert P. Monroe, Boston, (physiologic aspects).

The subject is of practical importance. Every sort of practitioner is interested in it. The rural and urban doctors are alike interested. The surgeons and the internists are both interested. The teachers and the clinicians are necessarily interested.

If cancer, diabetes, tuberculosis, Bright's disease and heart disease, with many areas of occurrence and with a many-sided symptomatology leading so often to death, claim widespread attention, may not pernicious anemia no less certain in its progress to a fatal ending, engage the active interest of the profession? A death-dealing malady should ever challenge the interest of practitioners.

The cause of pernicious anemia is not known. But, much has been written upon the subject. Many theories and beliefs have been enunciated upon its etiology. Minot, in the Oxford Press, gives an interesting summary of the recent work on the disease. It is generally thought that the process is a hemolytic one of long duration. One group considers its pathogenetic processes to be due to gastrointestinal disturbances; another to dietary deficiency; another to chronic sepsis; another to abnormal splenic function; another to unsaturated fatty acids; another "considers amino acids to be the hemolytic agency."

Among the symptoms, intestinal functions are prominent in pernicious anemia; gas, indefinite pain, loose bowel movements and the like are found. Along with these signs, loss of weight, emaciation, weakness associated with cachexia and anemia, mark the progress of the disease.

Changes in the central nervous system set up symptoms and signs of motor and sensory disturbances; defect of special senses, hemorrhages, are some of the terminal manifestations of the disease. To these may be added dyspnea, cardiac weakness and heart misfunction, febrile reactions, enlargement of spleen and liver with serious and grave alterations in the blood system. This latter series of changes reduce the red cell count to 2,000,000 or less, the hemoglobin to 30 to 20 per cent and certain more or less characteristic changes in the red cells.

Summarizing the symptoms, one notes the gradual progress of the disease; weakness and unusual fatigue upon little exercise. Patients with pernicious anemia express many indefinite complaints in attempting to describe the sort of weakness and fatigue experienced. In this phase of the progressive movement of the disease diagnostic enquiry is often unsatisfactory or clouded. But later, as studies of the blood proceed, symptoms related to the gastrointestinal tract appear. Sensations in the mouth, about the tongue are experienced, such as soreness, rawness, aggravated and accentuated by certain kinds of foods, as acid, hot, spiced or rough food. The tongue may be extremely involved showing raw areas with swelling and irritation. Likewise, the mucosa of the mouth and back of the throat may participate in this process, creating mouth-symptoms of decided nature. The stomach and the intestines, in turn, may enter the clinical symptomatology. Gastric discomfort, with the several sorts of symptoms emanating from achylia gastrica, may be depicted as consonant with progress of pernicious anemia.

In answer to the question, "Is liver substance of value?" we may turn to a recent discussion:

Minot and Murphy, Boston (*Jour. A. M. A.*, June 12, 1926, page 1861), reported forty-five patients with pernicious anemia treated by a

special diet for from six weeks to two years The diet was composed especially of foods rich in complete proteins and iron, notably liver, giving from 120 to 140 gm. a day. In addition, each day, the diet contains at least 120 gm. of muscle meat, and an abundance of fresh vegetables and fruits. The starch was normal in quantity while the fats were purposely low in amount. On such a diet, regularly and persistently continued, prompt, rapid and distinct remissions were experienced and systematic improvement was noted except in spinal cord degeneration. Cases with red blood count of 1,470,000 before taking this diet, after a month showed 3,400,000 red cells. All the patients improved in health.

Fitz, Murphy and Monroe, of Boston, making special studies on the blood, following the use of the diet in eleven of the forty-five cases, reported within a few days after beginning the diet, a temporary greater output of red cells lasting about ten days, the peak of the rise occurring in from four to ten days. A decrease of icterus index occurred. The corpuscle protein content increased with hemoglobin concentration. The plasma protein nitrogen reading remained constant and the non-protein nitrogen was not affected.

In the discussion, Dr. Warthin, Ann Arbor, cited a case of a woman who had suffered from pernicious anemia since 1895, and who died thirty years afterward. For many years she lived on one apple a day. At the age of seventy-six, she became senile and then developed a huge appetite for meat. After this, the picture of pernicious anemia disappeared and she lived to be eighty-six. Dr. Allen considered the disease to be a metabolic disease due to infection of the blood-forming organs. Allen was favorably impressed by Whipple's work, but was not sure as to the results of liver. It does not cure pernicious anemia, so he observed.

Dr. Mosenthal, New York, restated the problem by saying there was something that destroys the red blood cells and it is our function to allow the body to regenerate the red blood cells faster than the toxic material can destroy them. He said we should especially allow the patient protein in order to build up the blood cells; high protein feeding is indicated; as well as a high caloric diet. Whether liver is the best high protein substance is a question yet to be decided.

From the foregoing report of this meeting of foremost American internists, one may gather the trend of attack upon the baffling disease. Although no final word may yet be uttered, an encouraging modicum of truth may be found in this discussion. This seems to point to a high protein feeding, possibly liver substance, as a promising dietary for these cases.

Illegal Chiropractors.

In the June issue of the Virginia Medical Monthly, editorial comment was made upon excellent work done in Richmond in a recent case of an illegal chiropractor. The aggressive and successful committee of the profession, which put into action the forces of the law, received well deserved praise. But dereliction on our part was obvious in that no mention was made of the personnel of the committee. The members of the profession may feel a desire to know who among them had been so vigilant as thus to champion the cause of medical practice in this city. It is, therefore, with pleasure that this column names the committee. To Dr. Lawrence T. Price, of Richmond, is due the credit for this splendid piece of public service, and we take pleasure in giving him credit in this column for his indefatigable effort.

News Notes

The University of Virginia, Medical Department,

Held its final exercises for 1926 in conjunction with those of the other departments at the University, June 13, 14 and 15. Several dances, before and during commencement days, added much to the social pleasures. The baccalaureate sermon was delivered on Sunday, the 13th, by Rev. Edgar Y. Mullens, D. D., president of the Southern Baptist Theological Seminary.

The second day was crowded with all kinds of features for the graduates and alumni, including the annual meeting of the Alumni Association, the alumni luncheon to the graduates, a baseball game in the afternoon, the reception of President and Mrs. E. A. Alderman to the alumni and graduates, and the alumni ball at night. That night were also held the initiation ceremonies to the Phi Beta Kappa

honorary fraternity, Dr. Dice R. Anderson, of Randolph Macon Woman's College, Lynchburg, Va., delivering the Phi Beta Kappa address. Of the twenty-seven students and three alumni receiving this honor, there were two from the medical school and one doctor of medicine: Drs. Oscar Swineford, Jr., Richmond, and Frederick H. Wilke, Morristown, N. J., from this year's class, and Dr. William S. Leathers, of the class of 1895, now dean of the Medical School of the University of Mississippi.

Following the business meeting of the Alumni Association, a bust of Dr. Hugh H. Young, of Johns Hopkins University, Baltimore, an alumnus of the University of Virginia, was presented to the Medical School. Dr. J. C. Flippin, dean of the Medical School, accepted the bust, and after it had been unveiled, Dr. J. H. Neff paid a tribute to Dr. Young's work in medicine.

President Alderman, in the course of the exercises announced that the $1,400,000 needed for expansion of the Medical School is in sight and that all but $100,000 had been secured.

Class day exercises were held on the lawn on the morning of the 15th and graduating exercises that afternoon. There was no formal address on this occasion, President Alderman speaking only a brief farewell to the class of 1926, following the awarding of degrees.

Forty-five of the three hundred and two graduates were from the School of Medicine. These represented nine states, the District of Columbia, and one foreign country. Three of them were women. Graduates in the Medical School, with their hospital appointments, are:

University of Virginia Hospital, University, Va.—Drs. Temple Ainsworth, Bay Springs, Miss.; DeWitt Hamrick, Philadelphia, Miss.; Taswell Paul Haney, Jr., Burnsville, Miss.; Lonnie M. Hines, Abingdon, Va.; William Cary Holt, Hampton, Va.; William L. Hughes, Jackson, Miss.; Charles Hanson Peterson, Monterey, Va. and Thomas Jackson Sims, Jr., Newport News, Va.

St. Vincent's Hospital, New York City—Dr. Homer C. Ashley, Winchester Center, Conn.

St. Luke's Hospital, New York City—Drs. Charles R. F. Baker, Sumter, S. C.; William LeRoy Dunn, Ashland, Va., and Frederick Henry Wilke, Morristown, N. J.

U. S. Naval Hospital, Boston, Mass.—Dr. Bruce E. Bradley, University, Va.

Bellevue Hospital, New York City—Drs. Thelma Flournoy Brumfield, Blacksburg, Va., and Julian Meade Ruffin, Norfolk, Va.

St. Vincent's Hospital, Norfolk, Va.—Drs. Louis Tiffany Claytor, Hopkins, S. C., and Maurice Jesse Miller, Norfolk, Va.

Syracuse Memorial Hospital, Syracuse, N. Y.—Dr. Janet Haldane Coleman, Williamsburg, Va.

Rochester General Hospital, Rochester, N. Y.—Dr. John Sumpter Cunningham, Waynesboro, Va.

Post-Graduate Hospital, New York City—Drs. David Philip Evans, Lynchburg, Va., and Rudolph Angus Nichols, Jr., Richmond, Va.

Virginia Mason Hospital, Seattle, Wash.—Drs. Oscar Hugh Fulcher, Sandidges, Va., and Ellis Dice Lineberry, Cliffview, Va.

Ancker Hospital, St. Paul, Minn.—Dr. Francis Chappelle Goodwin, George West, Texas.

United States Army—Dr. Jacob Charles Harshbarger, Port Republic, Va.

Cincinnati General Hospital, Cincinnati, Ohio—Dr. William Daniel Hickerson, Remington, Va.

Bridgeport Hospital, Bridgeport, Conn.—Dr. Charles Joseph Horgan, Washington, D. C.

Stuart Circle Hospital, Richmond, Va.—Dr. Algernon Smith Hurt, Jr., Richmond, Va.

Boston City Hospital, Boston, Mass.—Dr. Charles DeForest Lucas, University, Va.

St. Elizabeth's Hospital, Richmond, Va.—Dr. Edward Conway Maphis, Warrenton, Va.

Blue Ridge Sanatorium, Charlottesville, Va.—Dr. Daniel Oscar Nichols, Charlottesville, Va.

Natchez Hospital, Natchez, Miss.—Dr. Virginia Borum Pope, Natchez, Miss.

Cleveland City Hospital, Cleveland, Ohio—Dr. Willcox Ruffin, Norfolk, Va.

Buffalo City Hospital, Buffalo, N. Y.—Drs. Samuel Burks Scott, Lynchburg, Va., and James Earle Wheeler, University, Va.

St. Luke's Hospital, Richmond, Va.—Dr. George Gerald Stone, Wytheville, Va.

Massachusetts General Hospital, Boston, Mass.—Dr. Oscar Swineford, Jr., Richmond, Va.

French Hospital, San Francisco, Calif.—Dr. Clarence William Trexler, Rockwell, N. C.

Wilkinson Hospital, Soochow, China — Dr. Louis Lee Wilkinson, Soochow, China.

United States Public Health Service—Dr.

Burbridge Scott Yancey, Atlanta, Ga.

Instructor in Anatomy, University of Virginia—Dr. Nicholas Floyd Adams, Jr., The Plains, Va.

Instructor in Pathology, University of Virginia—Dr. Sam Hayes Conner, Memphis, Tenn.

In addition to the above, the following have not accepted hospital appointments:

Dr. James Scott Chalmers, Jr., University, Va.

Dr. Edward Thorne Harrison, Littleton, N. C.

Dr. Frank Read Hopkins, Hot Springs, Va.

Our Next State Meeting.

Many of our readers will learn with deep regret of the passing of Dr. R. Lloyd Williams, of Norfolk, who had been selected by the local society as chairman of the committee of arrangements for the meeting there this fall. Norfolk doctors will use every effort to keep this from casting a shadow on the meeting and have appointed Dr. Israel Brown as chairman of the committee to take up the work and "carry on" from where Dr. Williams laid it down. Of course minor adjustments with regard to the work will be necessary, but everything will soon be moving smoothly. Dr. Brown has offices in Medical Arts Building, Norfolk, and will be glad to answer such inquiries as may be addressed to him with regard to our coming meeting.

Our president, Dr. W. L. Harris, Norfolk, has been taking an active interest in the Society and has visited such of the societies as he could, with an idea of interesting them in organization and the State Society. His selection of guests for this meeting will add greatly to the interest of the scientific meetings, and social features a plenty will be provided for members and the ladies accompanying them. Make your plans to be there.

Before the next issue of the Journal appears, all members should receive the usual cards requesting titles of paprs for ethe program. It is the wish of the Program Committee that each contributor to the program should arrange with a member to open the discussion on his paper and send name of such party to be published on the program. According to the resolution adopted last year, and still in force, "No title shall be accepted for the program prior to two months before date of the annual meeting," which this year is August the 12th. After this time, titles will be received until fifty are in hand.

We want to make this the best meeting in our history. Each member can help. Some of the State societies this Spring have reported attendance of from ten per cent of their membership in some of the large societies, to twenty-five per cent in societies about the size of ours. We seldom fall behind this last figure. Let's make it even better this year.

Married.

Dr. Douglas VanderHoof and Mrs. Nancy Selden Habliston, both of Richmond, June 22, in New York City. They left for a trip abroad.

Dr. Charles L. Rudasill, Richmond, and Miss Aline Beville, Crewe, Va., June 30.

Dr. George O. Martin, Cullen, Va., of the class of '26, Medical College of Virginia, and Miss Mary Elizabeth Ballou, Richmond, June 7. They will make their home in Richmond, Dr. Martin having accepted an internship at St. Luke's Hospital.

Dr. Bernard W. Leonard, of Richmond, but now connected with the Children's Department of Johns Hopkins Hospital, Baltimore, and Miss Ruth Dyer, Portland, Maine, the middle of June.

Dr. Richard A. Bowen, II, and Miss Elmira Peace Ruffin, both of Richmond, June 23. Dr. Bowen was graduated from the Medical College of Virginia this year, and, after August 1st, will be stationed at Walter Reed General Hospital, Washington, D. C.

Dr. William Irvine Owens, of the class of '23, Medical College of Virginia, and Miss Gertrude Emberson, New Rochelle, N. Y., June 22. They expect to make their home at Pulaski, Va.

Dr. William Henry Sebrell, Jr., of the class of '25, University of Virginia School of Medicine, and Miss Margaret Shirley Bruffey, Charlottesville, Va., June 19. Dr. Sebrell is a first lieutenant in the United States Pubic Health Service and is located at New Orleans, La.

Dr. Gilmer Gustave Holland, of Holland, Va., and Miss Grace Hannah Bailey, of Farmville, Va., June 25.

Dr. Andrew Stephens Graham, Columbia, S. C., recently of Seattle, Wash., member of the class of '25, University of Virginia, Medical Department, and Miss Nancy Hart Gordon, of University, Va., June 26.

Preventable Blindness.

Since the passage of the Missouri Constitutional Amendment providing pensions for the deserving blind in that State, *Health News* states that there have been submitted 5,927 applications for relief. In reviewing causes of blindness of applicants, the recurrence of gonorrhea and syphilis reveals a startling significance. It is conservative to estimate that 25 per cent of the cases considered are due to venereal diseases. Under the statute, $25 a month is granted to applicants over 21 years of age who have been residents of Missouri for at least ten years, or have lost their sight while a *bona fide* resident of that State, and who do not have incomes from all sources amounting to $780 per annum.

From the standpoint of economy, the conditions in Missouri show the need for venereal disease control. The need of vigorous measures for the control of these diseases is emphasized, according to this report, when consideration is given to the humanitarian aspects of the thousands of blinded persons throughout the United States, many of whom are innocent victims of these diseases.

Dr. R. Bruce James,

Danville, Va., has been appointed post physician and lecturer on biology at the Virginia Military Institute, Lexington, Va., and will enter upon his duties there early in September.

Dr. Elizabeth Holt Edmunds,

Of Halifax, Va., was recently operated on at the Memorial Hospital, Worcester, Mass., and is making a good recovery. Dr. Edmunds is a member of the class of '25, University of Virginia, Medical Department, at which time she received an appointment to the Worcester hospital.

Mail Directory Information Card Promptly.

During the month of June, every physician in the State should have received a Directory information card. Every one is urged to fill out and return the stamped card regardless as to whether he or she has changed their residence or office address.

This information will be used in compiling the Tenth Edition of the American Medical Directory, now under revision in the Biographical Department of the Association. The Directory is one of the altruistic efforts of the Association and is published in the interest of the medical profession which means ultimately in the interest of the public. It is a book of dependable data concerning the physicians and hospitals in the United States and Canada.

Early Summer Vacationists.

Dr. H. C. Beckett, Chase City, Va., returned home recently after a visit to his son in Washington, D. C.

Dr. C. V. Montgomery, South Hill, Va., is home again, after a short visit at Virginia Beach.

Dr. and Mrs. Beverley R. Tucker, Richmond, left early in June for a trip abroad.

Dr. and Mrs. H. S. Belt, South Boston, Va., were visitors in Lynchburg, Va., last month, during the commencement season.

Dr. and Mrs. F. E. Booker, Halifax, Va., attended the Hampden-Sidney finals, in June, on the occasion of the graduation of their son.

Dr. and Mrs. Roy K. Flannagan, Richmond, were recent visitors in Afton, Va.

Dr. Reid White, Jr., a recent graduate of the University of Pennsylvania Medical School, has been visiting his father, Dr. Reid White, in Lexington, Va.

Dr. and Mrs. J. L. Early, after an automobile trip in the West, visited relatives in East Radford, Va., before returning to their home in Saltville, Va.

Dr. and Mrs. W. A. Brumfield, Blacksburg, Va., were in Charlottesville, the middle of June, to be present at the graduation in medicine from the University of Virginia, of their daughter, Miss Thelma Brumfield.

Dr. and Mrs. Charles R. Robins, Richmond, are spending several weeks visiting in Europe.

Dr. and Mrs. Charles Fox Graham have returned to their home in Wytheville, Va., after a visit to Winchester, Va., and Philadelphia.

Dr. and Mrs. N. T. Ennett, Richmond, have been spending some time at their summer home near Morehead City, N. C.

Dr. and Mrs. Marion W. Ransone are visiting relatives in Hampton, Va., until August the first, at which time Dr. Ransone, who graduated this year from the Medical College of Virginia, will enter upon his duties as intern at the Walter Reed General Hospital, Washington, D. C.

Dr. and Mrs. R. Swanson Kyle returned to their home in Galax, Va, about the middle of June, after an extended trip through Virginia and to some of the Eastern cities.

Dr. and Mrs. S. W. Budd, Richmond, are

home again after a motor trip through the Valley of Virginia.

Dr. and Mrs. Fred Hodges, Richmond, are early summer visitors at Natural Bridge, Va.

Dr. and Mrs. Warren T. Vaughan, Richmond, have also been spending some time at Natural Bridge, Va.

Dr. and Mrs. J. Thomson Booth, Ashland, Va., have been on a visit to Cape Charles, Va.

Dr. Lewis C. Lush, Winterpock, Va., has sailed for Panama, to enter upon his duties as intern at the Ancon Hospital, to which place he received appointment at time of his graduation from Medical College of Virginia, this year.

Dr. Grace B. Rollins, of this year's class, Medical College of Virginia, is in New York City, where she is taking a special course at Columbia University.

Dr. and Mrs. J. C. Darden have returned to their home in Salem, Va., after a visit in Smithfield, Va.

Dr. Percy Harris, Scottsville, Va., visited his father in Radford, Va., the last of June.

Dr. and Mrs. W. W. Gill, Richmond, sailed from Norfolk, the first of this month, for a visit to Boston, Mass

Home From Early Camp.

Drs. J. N. Barney, Fredericksburg, Nelson Mercer, Richmond, and Llewellyn Powell, Alexandria, with the rank of Lieutenant Colonel, and Drs. Bruce L. Randolph and A. B. Spahr, of the class of '26, Medical College of Virginia, with the rank of First Lieutenant, returned the last of June from attendance upon the Medical Reserve Officers' Training Camp at Carlisle Barracks, Pa., for the period of June 16-30, inclusive.

Dr. Pauline Williams,

Of Richmond, Va., has gone to Baltimore, where she is taking a special course of study for the summer months, at Johns Hopkins University.

Memorial Hospital, Danville, at Last Opened.

Owing to failure to complete the floor work, the Memorial Hospital, Danville, Va., was not opened in June, as first anticipated. The formal opening was held, however, on July 8th, at which time the hospital authorities kept open house from 10 A. M. to 10 P. M.

American Laryngological Association.

At the meeting of this Association, last month, Dr. Chevalier Jackson, Philadelphia, was elected president, and Dr. George M. Coates, Philadelphia, secretary.

Dr. Morris Levine,

New York City, has been promoted to associate professor of otology at the New York Post-Graduate Medical School and Hospital.

Dr. J. A. Rucker,

Bedford, Va., sailed June the 14th for a Mediterranean cruise, to visit Palestine, Egypt, and the capitals of Europe. He expects to return about the middle of September.

Dr. Robley R. Goad,

Of the class of '25, Medical College of Virginia, after a short time at Richlands, Va., has accepted a position with the Virginia Iron, Coal and Coke Company, and is located at Inman, Va.

New York Medical Practice Act Amended.

After a struggle for a number of years, the Medical Society of the State of New York has secured an amendment to its Medical Practice Act which provides, primarily, for the enforcement of the existing statute. This is to be accomplished by "Annual registration of all physicians by the Board of Regents; limitation of the practice of medicine and the use of the title 'doctor' to those licensed by the Board of Medical Examiners; prosecution of all violators of the law by the Board of Medical Examiners with the assistance of the attorney general instead of the county district attorney, except in two or three of the largest counties; prosecutions to be brought in courts of special session where such exist, and the Board of Medical Examiners to employ inspectors to investigate charges of violation of the law and collect evidence for the attorney general."

Dr. Grayson Honored.

The College of William and Mary, Williamsburg, Va., during its commencement exercises in June, conferred the honorary degree of doctor of laws upon Rear-Admiral Cary T. Grayson, of Washington, D. C. Dr. Grayson is an alumnus of this college and has always been interested in its welfare.

Dr. Joseph H. Luscinian,

Formerly of Blacksburg, Va., and an alumnus of the University of Virginia, Medical Department, has opened offices in Huntington Building, Miami, Florida, where he is limiting his practice to general roentgenology and radiotherapy. Since his graduation in 1924,

Dr. Luscinian has taken up special work in roentgenology at the University of Maryland Hospital, Baltimore, and the Massachusetts General Hospital, Boston.

Dr. W. G. Martin,

Recently of Radford, Va., has moved to Kenova, West Virginia, where he will be connected with the medical service of the Kenova division of the Norfolk and Western Railroad.

Dr. Ruth S. Mason,

Of the class of 25, University of Virginia, Medical Department, who has just completed a service at Petersburg Hospital, Petersburg, Va., has located at 18 Franklin Street, that city, for the practice of medicine.

Dr. Mallory S. Andrews,

For the past year an intern at Norfolk Protestant Hospital, Norfolk, Va., is now practicing medicine in that city, with his offices at 8 B Westover Terrance.

Dr. W. S. Rankin,

Charlotte, N. C., suffered painful injuries when an automobile in which he was riding, early in June, skidded and overturned. Mrs. Rankin, who was with him, was slightly injured.

Dr. L. H. Apperson,

For the past several years of Petersburg, Va., has located in Richmond, Va., and is associated with Dr. J. G. Carter, with offices at 115 West Twelfth Street.

Dr. J. Wood Jordan,

Formerly of Ashland, Va., who saw service in the World War and later was a major in the U. S. Public Health Service, has located in Bristol, Va., where he is limiting his work to diseases of the chest.

Dr. J. Shelton Horsley,

Richmond, gave the address on surgery before the Medical Society of the State of North Carolina, at its annual meeting, the middle of June. His subject was "Stomach Trouble."

Squibb Branch Office in New Orleans.

In the course of a swing through the Southern States, General Sales Manager R. D. Keim, of E. R. Squibb & Sons recently completed arrangements for the opening of a branch office in New Orleans, La. This office, to be located in the Queen Crescent Building at 344 Camp Street, will carry a complete stock of biologicals, arsphenamines, insulin and a selected list of other Squibb specialties. The purpose is to provide the medical, dental and pharmaceutical professions of Louisiana, Mississippi and neighboring states with fresh stocks of these products, kept under proper refrigeration at all times and available any hour of any day.

Dr. Charles F. Manges,

Of the class of '25, Medical College of Virginia, upon completion of his internship at Lewis-Gale Hospital, Roanoke, Va., July the 1st, moved to Christiansburg, Va., where he is connected with the New Altamont Hospital.

Dr. Wood of University of Virginia Granted Leave of Absence.

The Board of Visitors of the University of Virginia, at its annual meeting during commencement week, granted a leave of absence for a year, to Dr. J. Edwin Wood, associate professor of internal medicine, for the purpose of doing research work abroad.

Dr. Thomas Duckett Jones, son of Dr. J. Bolling Jones, of Petersburg, will have charge of Dr. Wood's work in his absence. Dr. Jones has been doing special work at the Massachusetts General Hospital, Boston, for some months.

Dr. Joseph A. McGuire,

Norton, Va., has been appointed by Governor Byrd as a member of the State Board of Health for a new term, effective July 1, 1926.

Dr. George H. Reese

Has been elected president of the Shrine Club of Petersburg, Va., for the following year.

Social Hygiene Course at Summer Schools.

Included in the program of summer educational courses at the University of Virginia is one on educational psychology, biology and sex education. This new course is the outgrowth of efforts made by the State Board of Health, through its social hygiene bureau, to bring to the attention of teachers the subject of sex education, not as a disconnected subject to be taught separately but as definitely and closely related to the major subjects of biology and psychology.

It is reported that other teacher-training schools in Virginia have similar courses, this summer.

Pulaski Hospital Opened.

The new Pulaski Hospital was formally opened in Pulaski, Va., July 1, at which time

many people visited and inspected this modern hospital. Light refreshments were served from 6 to 9 P. M. Officers of the hospital are: Dr. R. H. Woolling, president; Dr. R. F. Thornhill, vice-president; Dr. D. S. Divers, secretary-treasurer.

American Urological Association.

At the anual meeting of this Association, held recently, Dr. John R. Caulk, St. Louis, Mo., was elected president, and Dr. Homer G. Hamer, Indianapolis. Ind., secretary.

Washington Arranging for A. M. A. Meeting.

Dr. William Gerry Morgan, Washington, D. C., has been chosen as chairman of the Committee on Arrangements for the meeting of the American Medical Association to be held in Washington, in the Spring of 1927.

Dr. Powell G. Fox,

Raleigh, N. C., has returned to his home after attending the Civitan International Convention in Philadelphia, the last of June. Dr. Fox, who is an alumnus of the Medical College of Virginia of the class of '22, is secretary of the Raleigh Civitan Club.

Dr. W. Lewis Schafer,

Who has just completed a year's internship at Stuart Circle Hospital. Richmond, is now spending some time at his home in Alexandria, Va.

Dr. J. T. T. Hundley,

Recently of Radford, Va., is now located at Lillybrook, West Virginia.

Milk Consumption Reaches New High Mark.

According to the United States Department of Agriculture, milk consumption in the United States, last year, reached the highest point in the Nation's history. The quantity of milk, including cream, consumed in liquid form, was 54,326,000,000 pounds, or an increase of 1,554,000,000 pounds over 1924. The figures are estimated on the basis of surveys and reports from Municipal Boards of Health in 450 cities having a total population of 39,158,576. Per capita consumption of milk and cream for the country as a whole is estimated at 1.20 pints a day. Milk consumption increased in most of the larger cities, especially those having a well-organized system of supply or in which milk campaigns have been conducted recently.

Dr. Carter's Daughters Home.

Misses Majorie Helen and Margaret Ellen, twin daughters of Dr. and Mrs. B. L. Carter, of Blue Spring Run, Va., are home for the summer after a successful year at the State eachers' College, at Farmville, Va.

The West Virginia State Medical Association

Held its annual meeting at Morgantown, the latter part of May, under the presidency of Dr. J. R. Bloss, of Huntington. It was decided to hold the next annual meeting at White Sulphur Springs, and the following officers were elected: President, Dr. Chester R. Ogden, Clarksburg; vice-presidents, Drs. Charles B. Wylie, Morgantown; Claude A. Frazier, Powellton, and Edmund L. Armbrecht, Wheeling. Mr. Sterrett O. Neale, Charleston, was re-elected executive secretary.

The National Association for the Study of Epilepsy,

At its annual meeting in New York City, early in June, re-elected Dr. George Kirby Collier, of Rochester, N. Y., president, and elected Dr. Arthur L. Shaw, of Utica, N. Y., secretary-treasurer. The next meeting will be in Cincinnati, Ohio.

Dr. W. T. Sanger Inaugurated as President of Medical College of Virginia.

Dr. William T. Sanger, after one year's service at the Medical College of Virginia, at Richmond, was formally inaugurated president of the institution on Monday, May 31, 1926.

The principal speakers on the morning program were Governor Harry Flood Byrd, of Virginia; Chancellor Samuel P. Capen, University of Buffalo; Eppa Hutton, Jr., president of the Richmond, Fredericksburg and Potomac Railroad, and chairman of the board of visitors of the Medical College of Virginia; Dr. B. M. Randolph, of George Washington University, and President Sanger. On the evening program the speakers were Dean J. C. Flippin, representing the University of Virginia; Dr. Wyndham Blanton, Hampden-Sidney College; Dr. Stuart McGuire, retiring president of the Medical College of Virginia; Dean C. B. Jordan, Purdue University; Dean Charles R. Turner, school of dentistry, University of Pennsylvania, and Miss Ethel Smith, secretary The Virginia State Board of Examiners of Nurses.

President Sanger was trained at Bridgewater College, Indiana, Columbia, and Clark Universities. From the latter, eleven years ago, he received the degree of doctor of philosophy in psychology. Recently he was awarded the

honorary degree of doctor of laws from Hampden-Sidney College, which eighty-eight years ago started a department of medicine in Richmond, Virginia, which later eventuated in the Medical College of Virginia, with schools of medicine, dentistry, pharmacy and nursing.

President Sanger is a young man and has had many kinds of educational experience in work from the elementary grades to the graduate school. He has been a college dean and, for three years prior to his coming to the Medical College of Virginia, he was secretary of the Virginia State Board of Education, with important State-wide duties.

During this first year of President Sanger's administration, more than a half million dollars has been raised for the further development of the Medical College of Virginia and other large gifts are in prospect.

Dr. Joshua E. Sweet,

Who has for a number of years so ably conducted the department of surgical research at the University of Pennsylvania, has accepted the same chair at Cornell University Medical School, in New York.

The American Pediatric Society,

At its recent meeting, elected Dr. Isaac A. Abt, of Chicago, president; Dr. Royal S. Haynes, New York, vice president, and re-elected Dr. Howard Carpenter, of Philadelphia, secretary-treasurer. Dr. Clifford G. Grulee, of Chicago, was elected editor.

The Beaumont Memorial Award.

To encourage investigations of alimentary tract function, Dr. Frank Smithies, Chicago, has presented to the School of Medicine of The University of Illinois, bonds in amount sufficient to yield annually, in perpetuity, not less than $100.00. This fund is known as "The William Beaumont Memorial Fund" and the income therefrom, as "The Annual Beaumont Memorial Award."

The award is to be made each year to the research or clinical investigator, who, in the judgment of a faculty committee, has contributed the most important work during the year, in the field designated.

The first award will be made in 1927. Manuscripts covering investigations do not have to be entered specifically for the award nor is it required that they be submitted to the faculty committee. The award is to be granted by the committee after it has considered carefully all investigations published during any year in periodicals throughout the United States. Thus, the award is available to workers in any institution, and is not confined to members of either faculty or student body of The University of Illinois.

Child Health in Switzerland.

Swiss children, in addition to their regular prescribed class work in gymnastics, are to be given by their teachers as much opportunity as possible for exercise and play, long walks and excursions being recommended in detailed regulations for the protection of the health of school children recently issued by the government of the canton of St. Gall. Much emphasis is placed by the regulations on the proper construction of school benches, adequate lighting and proper posture, the teachers being required to watch the children's posture and amount of clothing worn, and also to take preventive measures against colds and overstrain.

Children in the Beet Fields of Wisconsin.

Child workers in the sugar beet fields of Wisconsin are now protected by State child labor laws. An order issued by the State Industrial Commission, issued under authority of a statute enacted by the Wisconsin legislature of 1925, limits the hours of children working in the beet fields to eight a day and forty-eight a week, forbids their employment between the hours of 7 P. M. and 7 A. M., and prohibits children under fourteen who have not completed the eighth grade from working during school hours.

For Sale.

Virginia $7,000 general practice in town of 1,200 people, on main line railroad. One other physician. Will sell with or without modern home. Address No. 497, care Virginia Medical Monthly. (Adv.)

Obituary

Dr. Readding Lloyd Williams.

It is with deep regret we announce the sudden death of Dr. R. Lloyd Williams, at his home in Norfolk, Va., on the afternoon of June 22nd. He was apparently in good health, except for several acute attacks on the day of his death.

Dr. Williams was born in Tarboro, N. C., sixty years ago, and studied medicine at the University of Virginia and later at Tulane University, New Orleans, receiving his medical diploma from the last named school in 1898. Shortly thereafter, he served with the United States forces in the Philippine Islands and, as major in the medical corps of the Army, he served with the American Expeditionary Forces in France, during the World War.

During Dr. Williams' sixteen years' residence in Norfolk, he had been actively interested in its civic and professional life. He had represented that city in the State Legislature and had for several years been senior city coroner. He was an active worker in and ex-president of the Norfolk County Medical Society, had served two terms as a member of the Executive Council of the Medical Society of Virginia, during part of which time he was chairman of the Council. At the time of his death, he was chairman of the committee in charge of arrangements for the next meeting of the State Society in Norfolk. His wife and a sister survive him.

Resolutions on Death of Dr. R. L. Williams.

At a called meeting of the Norfolk County Medical Society, on the 23rd of June, 1926, the following minute was unanimously adopted:

The members of the Norfolk County Medical Society are deeply distressed at the death of our beloved and honored fellow member, Dr. R. Lloyd Williams.

Dr. Williams was always active in the affairs of the Society, having served as Councillor and President. At the time of his death he was Chairman of the Committee of Arrangements for the meeting of the State Society.

Loved and was beloved by his fellow physicians, by his genial and kindly disposition, he was endeared to all. We will miss him.

Be it Resolved, That a page be set aside in the minute book of this Society dedicated to his memory;

That a copy of these resolutions be sent to his family with our sincerest sympathy;

That these resolutions be published in the Norfolk daily papers, and the *Virginia Medical Monthly.*

Israel Brown, *Chairman.*
E. C. S. Taliaferro,
W. L. Harris,
Committee.

Dr. Powhatan Moncure,

Bealeton, Va., for many years a member of the Medical Society of Virginia, died May 3rd, of arteriosclerosis, after having been in bad health for some time. Dr. Moncure was born in Stafford County, Va., sixty-five years ago, and studied medicine at the Medical College of Virginia, from which he graduated in 1884. His wife and a daughter survive him.

Dr. Haughton Baxley,

Markham, Va., a graduate of the College of Physicians and Surgeons, Baltimore, in 1889, died of pneumonia, May 28th, aged fifty-eight years. He was one of the founders of the Maryland Medical College and Franklin Square Hospital, Baltimore.

Dr. John Howland,

Professor of pediatrics at Johns Hopkins University, Baltimore, and one of the country's leading pediatricians, died in London, England, June 20, following a surgical operation. He was fifty-three years of age and graduated in medicine from the Medical College of New York University in 1897. For a number of years he was associated with Dr. L. Emmett Holt, of New York, and had been one of the editors of the *American Journal of Diseases of Children*, since its foundation.

Dr. Russell Daniel Carman,

Prominent roentgenologist, and head of the department of roentgenology at Mayo Clinic, died in Rochester, Minn., June 18, death being due to cancer of the stomach. He was born in Iroquois, Ontario, fifty-one years ago and was graduated from the Marion-Sims College of Medicine, St. Louis, Mo., in 1901. He was an ex-president of the American College of Roentgenology and of the Radiological Society of North America.

Dr. David Jasper Hill,

Lexington, N. C., died of angina pectoris, May 13, aged sixty-two years. He graduated from the College of Physicians and Surgeons, Baltimore, in 1893, and was a member of his State and other medical societies.

Dr. Bryan Gordon Crowell,

Son of Dr. and Mrs. L. A. Crowell, Lincolnton, N. C., died in that place, May 9, after a short illness. He graduated in medicine from the University of Pennsylvania, Philadelphia, in 1922. Dr. Crowell was a veteran of the World War. He was also a member of the Medical Society of the State of North Carolina and of the staff of the Lincolnton Hospital. His wife and two children survive him.

The Zoalite—A New Combination Ray

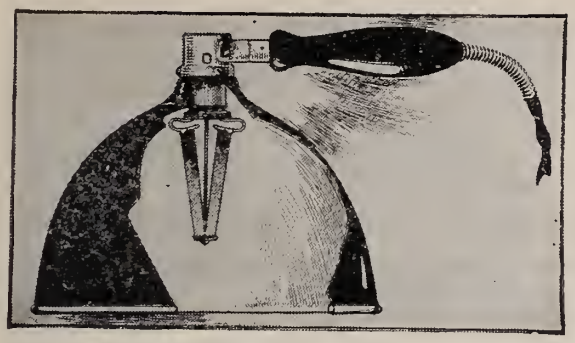


Diagram Showing Generator Used in New Burdick Zoalite Lamp.
The substance comprising the Zoalite Generator, although rather costly to produce, is of such a nature that it is extremely hard, durable, and will stand up under the most adverse conditions, thus assuring a minimum of upkeep after the moderate first cost. This material, on being slowly heated to incandescence, showed a continuous and a line spectrum combined, something heretofore unknown, except in the pure solar spectrum.

Furnished with long Cords, Plug and Special Switch, $15.00.

Special Goose-Neck with Clamps to fasten to chair or table. Extra, $4.50.

A new Generator which produces the Infra-Red and the longer-wave bands of the visible Spectrum.

Penetrates deeply into human tissue, giving quick relief from pain.

The radiations from the new Burdick Zoalite may be summarized as follows:

They are analgesic.

They are soothing and sedative.

They produce an active hyperemia of freshly oxygenated blood.

They produce heat in the tissues themselves; and as heat is atomic motion, these rays produce the highest type of cellular massage.

These rays will not burn or shock the patient or coagulate healthy human tissue.

They positively break up stasis and congestion by derivative action or by direct action, which is particularly indicated in anemia or circulatory disturbances.

McINTOSH DIATHERMY APPARATUS

The IDEAL High Frequency Apparatus for the General Practitioner's Office

No. 8075

Price, $575.00 Complete.

Low energy loss, High Insulation, Step-Up Transformer.

Non-pitting. Non-oxidizable, air cooled Spark Gap, assuring constant service.

Oil immersed, Non-spraying, Franklin Glass Plate Condenser.

Three separate and distinct High Frequency currents.

High Amperage d'Arsonval current for Diathermy, Auto-Condensation and Electro-Coagulation.

Medium Voltage Tesla Current for Functional Disturbances.

High Voltage Oudin High Frequency Current for Desiccation and treatment of Neurosis.

Accurate control essentials.

Perfect Resonance.

Write for Catalogues and Literature.

Experienced men to install and service these outfits.

503 Granby Street, Norfolk, Va.

POWERS & ANDERSON, Inc.
Surgical Instruments, Hospital Supplies, Etc.

603 E. Main Street, Richmond, Va.

Capital $1,000,000 Surplus Earned $1,500,000

ESTABLISHED 1892

To act as Executor, Guardian and Trustee
$30,000,000
of investments held in Trust

Confidential Interviews Invited.

COLLEGE OF WILLIAM AND MARY

THE STATE COLLEGE FOR MEN AND WOMEN

TWO PRE-MEDICAL COURSES—Two-Year and Three-Year—Three Year Course leads to Bachelor of Science degree after one or more sessions in medicine.

Other Special Courses—Teacher Training; Home Economics; Pre-Engineering; Pre-Law; Commerce; Business Administration; Finance; etc.

Regular academic courses leading to the Bachelor and Master degrees.

For particulars address THE COLLEGE OF WILLIAM AND MARY
J. A. C. CHANDLER, President. WILLIAMSBURG, VA

INCORPORATED 1871

LIFE INSURANCE COMPANY OF VIRGINIA

RICHMOND, VIRGINIA.

WE WISH TO CALL ATTENTION, ESPECIALLY TO THE YOUNG MEN OF THE MEDICAL PROFESSION, TO THE ADVANTAGES OF THE ECONOMIC POLICY

This form of Insurance is especially adapted to men of moderate means with growing families, the insurance being arranged so as to give the greatest amount of protection at the time most needed and at the lowest possible premium. This policy contains a very attractive convertible clause which makes the contract elastic.

RATES FOR WHOLE LIFE—10-PAYMENT, 15-PAYMENT OR 20-PAYMENT ECONOMIC POLICY WILL BE QUOTED UPON APPLICATION

JOHN G. WALKER, President

Virginia Medical Monthly

OFFICIAL ORGAN OF THE MEDICAL SOCIETY OF VIRGINIA

Vol. 53, No. 5.
WHOLE No. 890.

RICHMOND, VA., AUGUST, 1926

$2.00 A YEAR
20 CENTS A COPY

THE N. Y. ACADEMY OF MEDICINE
AUG 17 1926

CONTENTS.

ORIGINAL COMMUNICATIONS:
The Diagnosis of Diseases of the Esophagus. Louis H. Clerf, M. D., Philadelphia, Penn. 279
Cholecystography. Fred M. Hodges, M. D., Richmond, Va. 281
The Treatment of Summer Diarrhea. Wm. B. McIlwaine. M. D., Petersburg, Va. 285
Cystitis, A Symptom. Joseph F. Geisinger, M. D., Richmond, Va. 288
Notes Upon Certain Borderlands of Pathology. John W. Preston, M. D., Roanoke, Va. 292
Observations on Cardiac Pain. J. Morrison Hutcheson, M. D., Richmond, Va. 295
Paralysis of the Left Recurrent Laryngeal Nerve in Association With Mitral Stenosis. E. U. Wallerstein, M. D., Richmond, Va. 298
Report on Year's Work in Endoscopy, University Virginia Hospital. Fletcher D. Woodward, M. D., Charlottesville, Va. 299
Hunner's Ulcer of the Bladder—A Report of Ten Cases. A. I. Dodson, M. D., Richmond, Va. 305
Iodine in Dysthyroidism.—A Review. Walter P. Adams, M. D., Norfolk, Va. 310
Practical Points in Obstetrics. W. H. Ribble, M. D., Wytheville, Va. 313
The Surgical Indications of Inflammatory Diseases of the Gall-Bladder. Aime Paul Heineck, M. D., Chicago, Ill. 315
ANALYSES, SELECTIONS, ETC. 323
THE COUNTY SOCIETY 326
WOMAN'S AUXILIARY 327
MISCELLANEOUS 327
THE TRUTH ABOUT MEDICINE 333
BOOK ANNOUNCEMENTS 335
EDITORIAL 336
NEWS NOTES 338
OBITUARY 346

INDEX OF ADVERTISERS—Advertising Page 5.

CONFIDENCE

THE confidence of the patient in his doctor is a great aid in restoring health.

But confidence is also a valuable asset in the business world. You would not deal with bankers, merchants or manufacturers whom you could not trust.

We as manufacturers of pharmaceuticals realize fully the responsibility which rests upon us to provide preparations on which you can depend in a crisis.

Our aim is to continue to deserve your confidence and to this end we spare neither trouble nor expense in our manufacturing processes.

The Maltbie Chemical Company

NEWARK, NEW JERSEY

Manufacturers of CALCREOSE and Other Pharmaceutical Products.

Our 215-page catalog will be mailed upon request.

INFANT DIET MEAD'S MATERIALS

Infant Feeding Is a Science

"Science rests not upon faith but upon verification"

MEAD'S DEXTRI-MALTOSE with either fresh, raw, cow's milk or *Mead's Powdered Whole Milk,* and water, makes the scientific formula possible.

The combination of

MEAD'S DEXTRI-MALTOSE,

milk, and water for the artificial feeding of infants has stood the test of time.

For Your Convenience

Pamphlet on Dextri-Maltose
Celluloid Feeding Calculator.

Samples sent cheerfully on request

The Mead Policy

Mead's Infant Diet Materials are advertised only to physicians. No feeding directions accompany trade packages. Information in regard to feeding is supplied to the mother by written instructions from her doctor, who changes the feedings from time to time to meet the nutritional requirements of the growing infant. Literature furnished only to physicians

MEAD JOHNSON & COMPANY, Evansville, Indiana, U. S. A.
Manufacturers of Infant Diet Materials Exclusively

Virginia Medical Monthly

Official Organ of the Medical Society of Virginia

Vol. 53, No. 5.
WHOLE No. 890.

RICHMOND, VA., AUGUST, 1926

20 CENTS A COPY
$2.00 A YEAR

Original Communications

THE DIAGNOSIS OF DISEASES OF THE ESOPHAGUS.*

By LOUIS H. CLERF, M. D., Philadelphia, Penn.
From The Chevalier Jackson Bronchoscopic Clinc.

With the introduction and development of diagnostic methods which furnish positive objective data regarding the normal function and disease processes of certain organs or structures, it usually follows that much of our knowledge of these diseases must be revised. Such was the case when esophagoscopy was placed among the safe and scientific methods in esophageal diagnosis.

In a review of many of the text-books of medicine of the past decade it was impressive to note that diseases involving the esophagus were given very brief consideration and that much was to be desired in the matter of diagnosis. As a result, too little attention was paid to this very important organ and the medical practitioner was prone to regard certain early symptoms of esophageal disease as having a functional rather than an organic basis.

That the esophagus is heir to many ills is shown by the categoric list of causes of dysphagia tabulated by Chevalier Jackson.[1] In a brief resume of these it should be recalled that the esophagus is a long, loose, redundant, movable, muscular tube which occupies such space as may be allowed it by surrounding viscera; that, while at rest, it is collapsed with its walls in apposition, being open only during the passage of food or fluid; that its function is to convey to the stomach, by a series of co-ordinated muscular contractions, food and fluids as well as a large quantity of saliva, more or less continuously secreted; and that it lacks a definite sensory nerve supply. It therefore follows that any pathologic process which either compresses the esophagus from without or involves the esophageal wall itself will encroach on its lumen and produce a variable degree of interference with the function of swallowing: that any disturbance of the esophageal innervation or the co-ordinated muscular movements will produce either actual dysphagia or will set up certain abnormal reflexes which interfere with normal function, and, further, that pain, a symptom of vast importance from the standpoint of the patient, is rarely an early symptom, being more often observed in the latter stages of disease.

Symptomatology.—The most common and very often the only symptom of esophageal disease *is a disturbance of the swallowing function.* This may be an indefinite subjective sensation which cannot be accurately described or localized except in a very vague manner. These sensations may be observed only when swallowing foods; they may be felt whenever the patient swallows even though it be only saliva, or there may be the sensation of a lump in the throat. A very important point to remember is that these sensations are often intermittent, also that there is a grave tendency to consider them as trifling or attribute them to nervousness or hysteria.

Globus hystericus, a common manifestation of so-called hysteria, is often observed in organic diseases of the esophagus. In these cases it is a reflexly excited spasm of a pharyngeal muscle, usually the crico-pharyngeus. The exciting lesion is often located in the lower thoracic esophagus and not at the level of the upper esophageal orifice where the sensations have been localized by the patient. Sooner or later these disturbances may progressively develop into a definite dysphagia so that solid or even soft foods cannot be swallowed. On the other hand, a patient may suddenly develop marked dysphagia without previously having had any symptoms referable to the esophagus.

Pain.—This symptom, if present, is invariably late and is therefore without practical value in diagnosis. Absence of early pain is an extremely common circumstance and also undoubtedly an unfortunate one so far as early

*Read by invitation before the Southwestern Virginia Medical Society, at Roanoke, March 30-31, 1926.

1. Jackson, Chevalier. Bronchoscopy and Esophagoscopy, Textbook, 1922.

diagnosis is concerned. It is not an uncommon experience to have a patient state that, although he noticed "there was some trouble in swallowing solid food, *it did not pain him at all* and therefore he did not worry until he began to lose so much weight." Pain when present is usually always a late manifestation, its absence is of no significance. Exceptions to this are pointed foreign bodies lodged in the esophagus which, by penetration or perforation of its wall, would produce considerable distress.

For purposes of localization it is of little value as the pain areas usually do not correspond to the actual position of the lesion. Foreign bodies in the esophagus, especially in the cervical portion, may be considered as an exception, but even in these there may be confusion as was observed in the case of a man with a tooth plate lodged in the esophagus at the level of the suprasternal notch. There was no pain referred to the neck; however, he complained of a sticking sensation referred to the left of the midline opposite the ensiform cartilage. This disappeared following removal of the foreign body by esophagoscopy.

Other symptoms occurring are emaciation, hematemesis and regurgitation. These usually occur late in the disease. Cough may occur and usually is the result of overflow of secretion into the larynx.

Diagnosis.—In order to be of more than academic interest, a diagnosis should be arrived at sufficiently early in the course of a disease so that the patient may enjoy all the advantages that treatment can offer. No special credit is due anyone for having made a diagnosis of cancer of the esophagus in an aged patient who has had dysphagia with progressive weight loss developing over a period of many months and is now slowly starving. *To be of value in cancer, the diagnosis must be made early, and must be positive.*

In the routine examination of every patient a carefully taken history is very important. Exhaustive and systematic inquiries should be made to elicit a possible etiologic factor. Dysphagia may have followed an attack of typhoid fever, diphtheria or scarlet fever. It may have come on during pregnancy. There may be elicited an account of the accidental or intentional swallowing of a caustic or corrosive substance. Valuable as this information may be, one must be cautious in arriving at hasty conclusions. An analysis of the history is often best made after the diagnosis is completed. The patient with aneurysmal compression of the esophagus may have attempted to swallow too large a bolus of food. Advanced cancer of the lower end of the esophagus may not yet encroach on the lumen of the esophagus to produce dysphagia, but may reflexly excite a spasm of the crico-pharyngeus which conforms in every respect to globus hystericus.

Careful general physical examination, including mirror laryngoscopy, will often give a clue to the diagnosis. Patients with a tuberculous laryngitis, recurrent paralysis of the larynx, or neoplasm involving the laryngopharynx often complain of difficult or painful swallowing. Dysphagia may occur in aneurysm of the aorta or in mediastinal neoplasm.

A routine Wassermann test of the blood should be made. Aneurysm and a positive Wassermann test usually always coexist.

These studies should always be carried out, not with the expectation that they will, in themselves, be sufficient to warrant making a positive diagnosis, but as a source of collateral information they will be of aid in verifying a positive or negative opinion based on further studies.

The final and outstanding aids in diagnosis of esophageal disease are, first, *roentgenology* to corroborate the physical findings in the chest and to study the function of the esophagus, and, second, *esophagoscopy* to inspect the interior of the esophagus.

Roentgen-ray study of the chest by fluoroscopy and by stereoroentgenograms will contribute much in the diagnosis of mediastinal disease which may give rise to esophageal symptoms as a result of compression or displacement. Esophageal function can be studied only by fluoroscopy with the aid of an opaque mixture and a bismuth or barium filled capsule. In this way there can be detected the presence of any disturbance in esophageal function, any deviation of its course, or abnormality in its lumen. These findings can be interpreted in terms of pathological changes and in many instances are correct; however, they cannot always be accepted as conclusive, and should be supplemented by esophagoscopy.

Esophagoscopy gives information based on direct inspection of the interior of the esophageal lumen. It has the virtue of being exact, and should, therefore, be considered as the

final arbiter in esophageal disease. It can be readily carried out by one trained in this procedure with a minimum of distress to the patient, with a maximum of safety, and without anesthesia, general or local. In certain cases specimen of tissue may be removed for histological examination.

The use of the bougie and all other methods blindly carried out are to be condemned as being dangerous, inconclusive and useless. When cancer has developed to such a size that it will obstruct the onward passage of a bougie there is little to be gained in diagnosis. The bougie is unable to differentiate between the ordinary pulsion diverticulum and one in which there is beginning malignancy or where there is subdiverticular stenosis of the esophagus; an uncomplicated cicatricial stenosis and one with beginning cancerous changes present no points of differentiation by bouginage. Blood on the tip of a bougie may indicate benign ulceration, erosion, cancer or trauma to the esophageal wall.

Conclusions

1. Every patient complaining of symptoms or sensations referable to the esophagus should be given the benefit of every diagnostic measure to determine the presence of actual disease.

2. A diagnosis of globus hystericus should not be made until after complete and thorough studies have failed to reveal any evidence of disease.

3. No esophageal study should be considered as completed until after a roentgen-ray study and esophagoscopic examination have been considered.

4. Blind methods of examination and treatment are dangerous and inconclusive and should be condemned.

128 *South 10th Street.*

CHOLECYSTOGRAPHY.

By FRED M. HODGES, M. D., Richmond, Va.

In February, 1924, Drs. Graham, Cole, and Copher, of St. Louis, in an article in the *J. A. M. A.* entitled "A Preliminary Report on the Roentgenographic Examination of the Gall-Bladder, a New Method Utilizing the Intravenous Injection of Tetrabromphenolphthalein Sodium Salt," describe a method which shows the gall-bladder on the roentgenogram almost as clearly as the barium meal shows the stomach. Graham began this work with the theory that if he could obtain a substance relatively non-toxic and soluble, containing a metal or atoms of iodine or bromine which could be carried to the gall-bladder in sufficient concentration, this material in the gall-bladder would make it opaque to the roentgen ray. Necessarily the substance would have to be excreted by the liver and carried to the gall-bladder in the bile. Using the knowledge that the gall-bladder concentrates its bile, he reasoned that a certain time would have to elapse before a shadow of maximal density would occur. He also concluded that a normal gall-bladder would show the densest shadow, and that if the liver were too badly diseased to excrete the material or the cystic duct were blocked or the function of the gall-bladder seriously impaired, no shadow would occur. During their investigations they used a great many compounds which were the derivatives of the phenolphthalein and phthalein groups, and finally recommended tetrabromphenolphthalein.

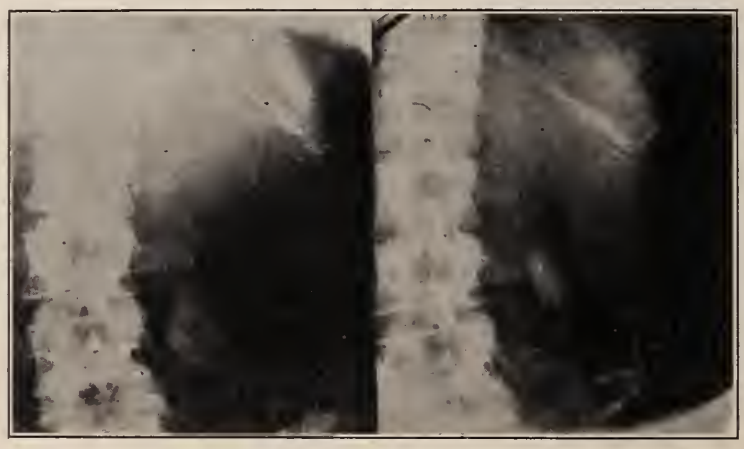
In January, 1925, Whitaker and Milliken recommended the use of sodium tetraiodophenolphthalein, since this salt is no more toxic and is about twice as opaque to the roentgen ray as the tetrabrom.

Either the tetraiodo or tetrabrom salt can be given orally in enteric coated capsules or intravenously. With either method food should not be taken after the administration of the salt since, if food is in the duodenum, bile is poured into the intestine, and even in normal gall-bladders there might not be enough concentration of the salt in the gall-bladder to show a shadow on the roentgenogram.

When the drug is given intravenously, a faint gall-bladder shadow can usually be seen from about the fourth to the seventh hour afterwards. The shadow of the normal gall-bladder as a rule increases in density until about the twenty-fourth hour, but at this time it is about half the normal size. From this time until the thirty-sixth to forty-eighth hour the shadow gradually decreases in size until it disappears entirely.

In cholecystography we have not only an unusually accurate method for the study of diseases of the gall-bladder, but also for the study of gall-bladder function. The size, contour, and position of the gall-bladder shadow are plainly visible. Cholesterol or negative

gall-stones show as less dense areas within the gall-bladder shadow. Adhesions distort or pull the gall-bladder to one side. Of more value probably than any of these are the findings in the cases where no gall-bladder shadow or a very faint shadow shows. Where no shadow at all shows, especially by the intravenous method, usually there is an obstruction of the cystic duct or marked disease of the walls of the gall-bladder. Graham has shown that usually in cholecystitis, the interstitial tissues and lymphatics of the gall-bladder and not the mucosa are diseased, and that this is probably due to the fact that gall-bladder inflammations are so frequently associated with a lymphangitis secondary to a hepatitis. When the lymphatics of the gall-bladder wall are diseased the organ loses its power of concentrating the bile and in the same way the power to concentrate the dye and give a dense shadow. A very serious disturbance of the liver function might also cause an insufficient amount of the dye to be excreted to cast a shadow of the gall-bladder, but in all probability in such instances there would be some clinical evidence of liver disease. When using the oral method a marked disturbance of intestinal digestion and absorption might prevent enough of the dye being carried to the liver to cast a shadow of the gall-bladder.



Case 1. Fig. 1. Normal gall-bladder after tetraiodophthaleim.
Fig. 2. The same case one hour after taking eggs and buttered toast.

Case. 2. Fig. 1. A rather small but normal gall-bladder.
Fig. 2. The same gall-bladder one and a half hours after eggs and buttered toast. The shadow shows distortion, and the stomach filled with barium showed the duodenum fixed in the gall-bladder area. Proven at operation.

Sosman, using cholecystography, has made a rather extensive study of the function of the gall-bladder. After using many drugs and foods by mouth and duodenal tube, he found that fats by mouth cause the quickest and by far the most marked effect on the gall-bladder.

It is not known definitely whether the gall-bladder empties itself through the cystic duct or through the lymph and venous channels in the gall-bladder wall, but within from twenty minutes to one hour after the ingestion of fats, the normal gall-bladder will become very much smaller in size and practically empty itself of all the dye. Sosman was unable to satisfactorily explain this phenomenon, since the gall-bladder gave the same quick response to the ingestion of fats in a patient who had a gastro-enterostomy and closed pylorus. He found that psychic tests, sight, smell, and taste of food had no effect on the gall-bladder. Carbohydrates had no effect; proteins and peptones caused a moderate decrease in the size of the shadow. Olive oil and castor oil, by mouth; atropine, physostigmin, pitnitrin, adrenalin, by hypodermic; hydrochloric acid, nitroglycerin, meat extracts, ginger, sugar, starch, glucose, and alcohol, by mouth had no appreciable effect on the size or density of the gall-bladder shadow. Mechanical factors, forced respiration, heat and cold, stimulation of the ampulla of Vater by food, etc., had practically no effect. Magnesium sulphate by duodenal tube had only a moderate effect on the gall-bladder.

Sosman found that an intact sphincter of Oddi was necessary to obtain a normal cholecystogram. Sodium bicarbonate by mouth caused a slight increase in the size of the gall-bladder shadow. He suggests that this apparent relaxation of the gall-bladder may be the reason why many gall-bladder patients experience some relief after the ingestion of alkalis. We know that fats cause a marked contraction

Case 3. Distortion of the gall-bladder due to adhesions. Proven at operation.

Case 5. A normal gall-bladder shadow with many stones in the right kidney pelvis just beneath. Without the dye test these shadows had been considered due to gall stones.

Case 4. Fig. 1. A somewhat faint gall-bladder shadow.
Fig. 2. The same case one and a half hours after eggs and buttered toast. There was practically no response to this food. Operation showed a diseased gall-bladder.

of the gall-bladder, and he also suggests this as a possible reason why many cases of cholelithiasis avoid fats.

Case 6. Gall stones after the dye test. No gall-bladder shadow seen.

Case 7. Gall stones. A very faint gall-bladder shadow showing after the dye test.

In diseased gall-bladders, the concentration of the dye and the contraction of the gall-bladder depend upon the amount of disease present. Where there is marked disease, practically no concentration occurs. This enables us to frequently determine slight variations from the normal, and it is hoped that by making earlier diagnoses, diseased gall-bladders can be removed, giving complete relief from symptoms before there has been a widespread involvement of the lymphatics, liver, and pancreas.

Cholecystography has become a routine procedure in all large clinics throughout the country, and all of them report the method as accurate in percentages varying from 90 to 96 per cent. The average is about 93 per cent. This is a remarkable record when compared with previous statistics. In our own work the diagnosis has proven correct in 91 per cent.

When positive evidence of gall-bladder disease is found by this test of gall-bladder function, we believe that the method will almost invariably prove correct at operation. Occasionally a gall-bladder functioning normally and reported as normal will be found at operation to be slightly diseased. This, in our experience, is more apt to cause error than is the reporting of a normal gall-bladder as diseased. However, if the time of the appearance of the dye as well as the amount of concentration is taken into consideration, probably very few cases will be reported as normal when there is definite disease present. Where the diagnosis is doubtful after the oral method, an intravenous injection should be done, since only in this way can we be certain that the dye has reached the liver.

Case 8. Negative or cholesterol stones showing in a gall-bladder which functioned practically normally.

Summary

We believe that where this test is combined with the usual gastro-intestinal barium meal examination, and in certain instances an examination of the bile obtained by duodenal tube, a far greater percentage of correct diagnoses in gastro-intestinal diseases will be made than has been possible in the past.

Bibliography.

1. Carman, R. D., and Counseller, V. S.: Radiological Diagnosis of Cholecystic Disease by the Graham Method: Preliminary Report. Tr. Sect. Gastro-Enterol. and Proct., Am. M. Assn., 1924, 77.
2. Graham, E. A., and Cole, W. H.: Roentgenological Examination of the Gall-bladder: Preliminary Report of a New Method Utilizing

the Intravenous Injection of Tetrabromphenolphthalein. *J. A. M. A.*, 1924, lxxxii, 613.

3. Graham, E. A., Cole, W. H., and Copher, G. H.: Roentgenological Visualization of the Gall-bladder by the Intravenous Injection of Tetrabromphenolphthalein. Tr. Am. Surg. Assn., 1924, xlii, 129.
4. Graham, E. A., Cole, W. H., and Copher, G. H.: Cholecystography: an Experimental and Clinical Study. *J. A. M. A.*, 1925, lxxxiv, 14.
5. Idem: Visualization of the Gall-bladder by the Sodium Salt of Tetrabromphenolphthalein. *J. A. M. A.*. 1924, lxxxii, 1777.
6. Idem: Roentgenological Visualization of the Gall-bladder by the Intravenous Injection of Tetrabromphenolphthalein. *Ann. Surg.*, 1924, lxxx, 473.
7. Idem: An Experimental and Clinical Study of the Roentgenological Visualization of the Gall-bladder by the Use of Various Compounds. *J. Missouri State M. Assn.*, 1925, lxxxii, 40.
8. Idem: Cholecystography: the Use of Sodium Tetraiodophenolphthalein. *J. A. M. A.*, 1925, lxxxiv, 1175.
9. Idem: Cholecystography: Its Development and Application. Leonard Research Prize Essay, 1925. Read before Am. Roentg.-Ray Soc., Washington, D. C., Sept. 22, 1925.
10. Graham, E. A., Cole, W. H., Moore, S., and Copher, G. H.: Cholecystography: Oral Administration of Sodium Tetraiodophenolphthalein. *J. A. M. A.*, 1925, lxxxv, 953.
11. Memees, T. O., and Robinson, H. C.: Oral Administration of Sodium Tetrabromphenolphthalein: Preliminary Report. *Am. J. Roentgenol.*, 1925, xiii, 368.
12. Milliken, G., and Whitaker, L. R.: The Clinical Use of Sodium Tetra-iodophenolphthalein in Cholecystography. *Surg., Gynec. and Obst.*, 1925, xl, 646.
13. Moore, S.: Cholecystography After the Method of Graham, Cole, and Copher. *Am. J. Roentgenol.*, 1925, xiii, 515.
14. Oakman, C. S.: Cholecystography by Oral Administration of Soluble Radiopaque Salts. *Am. J. Roentgenol.*, 1925, xlv, 105.
15. Sosman, M. C., Whitaker, L. R., and Edson, P. J.: Clinical and Experimental Cholecystography. Read before Am. Roentg.-Ray Soc., Washington, D. C., Sept. 22, 1925.
16. Stewart, W. H.: Tetrabromphenolphthalein Sodium Salt in the Roentgenographic Diagnosis of Gall-bladder Disease *Am. J. Roentgenol.*, 1925, xiii, 259.
17. Stewart, W. H., Einhorn, M., and Ryan, E. J.: Recent Advancements in Cholecystography. *Radiology*, 1925, v, 222.
18. Whitaker, L. R., and Milliken, G.: A Comparision of Sodium Tetrabromphenolphthalein with Sodium Tetraiodophenolphthalein in Gall-bladder Radiography. *Surg., Gynec. and Obst.*, 1925, xl, 17.
19. Whitaker, L. R., Milliken, G., and Vogt, E. C.: The Oral Administration of Sodium Tetraiodophenolphthalein for Cholecystography. *Surg., Gynec. and Obst.*, 1925, xl, 847.

801 *West Grace Street.*

THE TREATMENT OF SUMMER DIARRHEA.

By WM. B. McILWAINE, M. D., Petersburg, Va.

On account of the unusually cool Spring, so far this year, we have not had the amount of infantile diarrhea generally seen in May in our part of Virginia, but, with the advent of June and hot weather, we may expect to see the number of cases increase rapidly if we are to keep pace with the statistics of last year. The mortality statistics, as sent me by Dr. Brydon, head of the Child Welfare Bureau of the State Board of Health, are as follows:

And so at this time I thought it would not be amiss for us to consider the most recent procedures for the treatment of these cases, almost peculiar to the summer months, in the hope that we may use every means at our disposal to reduce the mortality quoted above. At the outset, let me state that very little of the following is original and that I have drawn freely from all of the periodical and text-books dealing exclusively with pediatric thought and study. But if we are to advance, we can only do so by trying to apply the work of the men who are studying and experimenting in the large centers of medical education, and, as it

Causes of Death	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Dysentery	3	2	2	4	13	37	48	45	31	16	9	4	214
Diarrhea (under 2 years)	12	19	16	17	45	154	216	150	156	131	35	8	959
Diarrhea (over 2 years)	12	10	14	12	25	41	64	44	27	30	15	12	306
Total	27	31	32	33	83	232	328	239	214	177	59	24	1479

is impossible for busy practitioners to get time for necessary rest and recreation, it is obvious that a condensation of scattered facts is at times very helpful.

After this rather tedious preamble, I shall endeavor to focus our attention on the clinical treatment of the diarrheal diseases of infants as seen by us, especially in the summer months.

The medical world in all of its branches is laying stress on the most important feature of any case, namely, the diagnosis, so, in treating a case of diarrhea, we must first of all consider just what the diagnosis of our case is. For simplicity, it seems to me that we may follow the division of Porter and Carter and group our cases into four classes, each of which has a definite cause and symptom and signs, and from which a rational treatment may be outlined—they are:

1. Mechanical diarrhea.
2. Fermentative diarrhea.
3. Proteolytic diarrhea.
4. Infectious diarrhea, commonly called dysentery.

Under mechanical diarrhea we consider the ingestion of some unsuitable article of food or something which sets up a mechanical irritation of the intestinal mucosa and gives rise to a diarrhea. Under this head come the all too frequent cases of undigestible foods, as raw fruit, partly cooked vegetables, heavy pastries, and rich greasy foods. The treatment of a case of this kind is:

1. Castor oil.
2. High colonic flushing.
3. Withdrawal of food and, later, a simple sterile easily digested diet.
4. Bacillus acidophilus culture.

A few authorities may consider castor oil a relic of barbarism, but, in my opinion, this drug still holds its position as probably the most effective single treatment.

The importance of sterility of material taken into the system after a mechanical irritation is to me most necessary, for it is from this mechanical irritation of the intestinal wall that the dreaded bacillus of dysentery gets in its deadly work, so we cannot be too careful in treating these cases. Personally, I also give the acidophilus bacillus as the intestinal flora is always deranged in a diarrhea, for I believe these bacilli help to prevent the growth of abnormal bacteria in the intestines.

In the diagnosis of fermentative and proteolytic diarrhea, we come to the most interesting and instructive feature of our summer diarrhea cases. The two conditions are so frequently not considered and treated as if they were only a simple diarrhea and given calomel, castor oil and a diarrheal mixture. Then, if the case does not improve, another round is given, and if there is still no improvement, the doctor grits his teeth and wonders why the case is so stubborn and whether he had better try one more round of calomel or call in another doctor to help him. The whole trouble lies in the lack of having made a proper diagnosis of the type of diarrhea—fermentative or proteolytic.

The most important differential points between these two forms of diarrhea are emphasized in the accompanying chart form so that proper treatment may be outlined:

DIFFERENTIAL DIAGNOSIS

Fermentative Diarrhea.	Proteolytic Diarrhea.
1. Cause: High sugar feedings; Condensed milk; Malted foods	1. Cause: High protein feedings; High milk protein.
2. Onset: Rather sudden, generally several days on loose stools.	2. Onset: Generally a rather longer period of intestinal derangement.
3. Character of stools: Large, watery, acid, green, odor not so bad.	3. Character of stools: Not so large or watery, not acid, brownish yellow, very foul and of peculiar "mousey" odor.
4. Marked irritation of buttocks.	4. Not marked.
5. Child does not appear toxic.	5. Child generally very toxic.
6. Anorexia not marked.	6. Anorexia marked.
7. Dehydration more noticeable.	7. Dehydration not so noticeable.
8. Restlessness marked; crying and fretting.	8. Child more somnolent and comatose.
9. Texture of skin is dry, skin loose and in folds.	9. Skin has a peculiar "doughty" feel.
10. Loss of weight is more apparent.	10. Loss of weight not so apparent.
11. Acidosis from loss of fluids.	11. Acidosis from toxemia.

We might conclude from the table that diagnosis could be made without difficulty though it is not always as easy as some would have us believe, but we can at least make a fairly good guess, enough to lead to a more rational and effective treatment.

It follows quite naturally that if the organism causing the trouble thrives best on a carbohydrate or sugar media, we should give a protein diet, and *vice verse*, so that the feeding of these cases becomes of paramount importance. I have made up another chart for the treatment of the two conditions which, as can be plainly seen, consists of following the lead given us by the diagnosis.

TREATMENT

Fermentative Dirrhea.	Proteolytic Diarrhea.
1. Dietetic: Protein food best given as protein milk, freshly prepared or in powdered form. Add some carbohydrates, as dextri-maltose, as quickly as possible.	1. Dietetic: Carbohydrate feeding. Withdraw milk entirely. Give milk sugar solution or cereal water. Weak tea and fruit juices. Add milk very slowly, best as buttermilk.
2. Make up fluid loss, water by mouth, rectum, hypodermoclysis, or intraperitoneal.	2. Control toxemia, force fluids. Give stimulants, as brandy and camphor. Support the heart, nad control temperature by active hydrotherapy.
3. Control fluid loss from bowel by small doses of opium; bismuth at times.	3. Rarely necessary, rather eliminate.
4. Control tenesmus, use soda colonic irrigation, starch and opium enemas.	4. Rarely necessary.
5. Treat the irritated buttocks with zinc oxide ointment and keep as dry as possible.	5. Rarely necessary.
6. Replace lost bacillus acidophilus by large dose of culture of the bacillus.	6. Same.

I am sure that we can all recall the clinical pictures of these two types of diarrhea, and I am equally sure that before long we shall be seeing each type this Summer. Cases may vary, of course, from very mild to fatal, but for our purposes I have described the moderately severe cases. In any event, the essential idea is that treatment is to be based on diagnosis,—not simply on the erroneous term of diarrhea.

In the consideration of infectious diarrhea, or dysentery, there is little that needs to be emphasized as to the diagnosis. All of us know it well,—the ill child straining with each of the 20-30 daily movements consisting of blood, mucus and pus, and with high temperature, toxic expression, etc. The picture is so common that it needs no stressing here. The treatment, however, is what we are most interested in at this time. First, let me say that these cases are undoubtedly infections, as has been proven beyond question, and the organism most frequently met with in this part of the country is the Flexner type of dysentery bacillus. This bacillus produces growths which are profoundly toxic to the human. From the above, both a prophylactic serum and a curative serum should do good. They are highly recommended by many writers. From personal experience, which has been limited to a few cases, I can only say that it is not always easy to give anything to an infant intravenously, and as the serum must be given early to get the desired results, often it is too late when we see the case to use it effectively. Each case is a law unto itself and must be so treated. I have tabulated a few ideas as to treatment as follows:

1. Treat every case as an infection similar to typhoid but much more severe, and as being easily transmitted by hands, clothing and flies.

2. Control toxemia from every possible angle:

a. Constant elimination from skin, bowels, and kidneys.

b. Hydrotherapy, as colonic irrigation, baths, sponging, etc.

c. Force fluids by every means.

d. Control abdominal pain and tenesmus by opium, atropine solution, or cocaine by rectum, this also induces rest and aids in nature's effort to overcome the infection.

e. Stimulate freely, especially with brandy.

3. Diet.—It has been demonstrated that the dysentery bacillus, grown on a media rich in carbohydrates, is less toxic than when grown on a protein medium, so we try to give a food poor in protein. It was found, however, that on an excessive carbohydrate diet, gas distention and toxemia were much worse, so a moderate carbohydrate diet is also used. Personally, when I begin on a food of any kind,

I use a mixture of buttermilk and cereal water or lactic acid milk, but I am becoming more and more convinced that other articles of diet which seem absolutely irrational are sometimes taken well, and at times we are forced by the patient to use things which shock us theoretically but which luckily seem not to hurt the patient; for instance, I am quite sure that after I gave in to the child's desire for Irish potatoes and soft eggs the case improved rapidly, and I am not alone in believing that simple articles of diet, as cereals, jello, soft eggs, toast, etc., are an aid to nourishment in dysentery cases, rather than so much liquid food, especially after the early stages of the disease and in older children. However, let us always remember that we are dealing with a toxemia first, last, and always, and that a strict diet is not a help if it is on the outside of the child. Often we do better by concurring in the child's desires as long as it does not increase the toxemia.

4. Drugs.—a. Castor oil should be given at the start and repeated at intervals depending on the distention and amount of toxemia.

b. Bacillus acidophilus culture, when given in large quantities, theoretically should do good, and it is better to give this than a diarrheal mixture, which may do harm by increasing the toxemia, since the diarrhea is checked and an already weakened stomach is likely to be upset.

As the paper is as condensed as I could make it to bring the subject of Summer diarrheal disease before you, I will not attempt a summary, but will hope that the year 1926 may be a banner year in reducing the mortality of these diseases in the State, especially in our Southside.

410 *West Washington Street.*

CYSTITIS, A SYMPTOM.*

By JOSEPH F. GEISINGER, M. D., Richmond, Va.
Stuart Circle Hospital.

The entire content of this paper is embraced in its title; and the observations which follow might well enough be omitted if it could be kept consistently and constantly in mind that bladder disturbance rarely represents a disease *per se*, but almost invariably expresses an effect beyond which lies a cause of greater moment.

Apparently, however, the mind does not relish or retain simple dicta without supportive evidence, and hence it becomes periodically the duty of certain specialists to remind the remainder of the profession of any laxity of diagnostic habit represented in the cases referred to them for review. In discharging this duty it is well enough for the specialist to realize that the general practitioner, with multitudinous problems occupying his thought, cannot be expected to remain as acutely conscious of the significance of certain localized situations as is his mentor, whose attention is daily focused upon the narrowed field in which they lie. At the same time, the specialist is not unreasonable in expecting an attentive regard of the data he has assembled to the end that frank ignorance, or simple but regrettable forgetfulness, may less frequently beset the patient's painful, and sometimes disheartening, struggle to restored health.

It is in this spirit of helpful co-operation that the writer approaches again a discussion of the present subject, after a review of the histories of about 1,000 separate individuals subjected to cystoscopic investigation of the urinary tract. He realizes fully that it is a subject stale from frequent handling, and perhaps tiresome to the well-informed audience he is addressing. But he realizes also, and more emphatically, that there are still coming to his hands two pathetic groups of individuals—those whose hematurias have been drugged while their undisclosed carcinomas marched on to inoperability; and those whose inflamed or irritated bladders have been treated to various procedures, while essential and disastrous lesions were becoming ineradicably rooted in kidneys just beyond. It would seem excusable, therefore, again to contemplate this latter group.

The function of the bladder as a reservoir and pump for the streams of urine steadily coming downward from the kidneys makes any interference with its mechanism of immediate, often imperative, concern to the patient. Excretion cannot halt while a crippled or irritated bladder indulges in rest and recuperation. The reception and expulsion of the urine must go on continuously, however intolerant the tissues may be to the accompanying dilatations and contractions. Vesical symptoms, therefore, are inescapable and are rarely ignored by the patient. They frequently ap-

*Read before the Warwick County Medical Society, at Newport News, Va., April 12, 1926.

pear as a major complaint in the history and demand both explanation and relief. It is, consequently, of fundamental importance that the physician to whom this symptom-problem is submitted shall not have his horizon limited to the point at which the disturbance is presenting itself,—else, in many instances, neither explanation nor relief will be forthcoming.

Perhaps in anticipation of the various insults to which it was destined to be subjected, the bladder has armed itself with an amazing degree of resistance to infection. Those accustomed to frequent visual inspection of the interior of this viscus are always interested in the not uncommon fact that a practically normal mucosa is acting as a channel for streams of pus from above. Bacteria of every type, including tubercle bacilli, have been recovered from the urine of patients in whom the bladder yet presented no lesion whatsoever. So great is this ability of the bladder to take care of itself, under all ordinary circumstances, that, in the absence of contributing factors, it is doubtful if a case of true cystitis would ever be known.

The contributing factors, however, are so numerous that vesical symptoms, commonly interpreted as cystitis are very frequently in the foreground. In the first place, it must be understood that it is not even necessary to have actual secondary involvement of the bladder to get bladder manifestations that may dominate the clinical picture. Realization of this fact introduces a wide and varied assortment of etiologic elements which a clearer definition of words will make it possible to exclude from any extended consideration in this paper. The term "cystitis" is usually very loosely applied. Cystitis commonly means bladder distress, but the reverse is not true. Without pyuria, cystitis does not exist, and when the discussion is limited to cases presenting in the urine evidence of actual inflammation, it is feasible to come promptly to a practical working basis without the maze of ramifications which immediately appear when all the possible causes of vesical symptoms, with and without pyuria, are brought under review.

But bare mention will, therefore, be made of the bladder excitability produced (a) by abnormal precipitates or constituents in the urine, resulting either from faulty metabolism or the ingestion of certain drugs or foods; (b) by nervous instability or actual nerve lesions; (c) by the possible allergic influence of certain articles in the diet; (d) by the simple mechanical effects of encroaching extra-urinary organs or tumors, such as pelvic masses in the female; (e) by certain pathologic processes in the anus, rectum, or sigmoid; (f) by various other irregular and unrelated factors which it is impossible to group under any general classification.

When vesical symptoms without pyuria exist, it is well enough to think of these possible causes first, and, if any of them are disclosed, it is reasonable to treat them tentatively as the actual etiologic elements operating, provided a comprehensive general physical examination develops no more likely explanation. If such treatment fails of results, or if such causes are not obvious at the outset, the urinary tract itself should then be explored, for therein also may lie lesions which, by reflex or other relationship to the bladder, may be productive of much vesical disturbance without actual inflammation (or pyuria). Caruncles, strictures of the urethra, minute lesions of the posterior urethra, verumontanitis, small prostatic enlargements, cysts and other growths in the bladder, strictures of the ureter, an occasional aseptic calculus—all these are possibilities here, and more especially that trigonal hyperemia, so frequently overlooked, so pronounced in its manifestations, and so ready to yield to appropriate management.

With the appearance of pyuria, however, the situation immediately undergoes a radical change. The presumptions which were admitted as reasonable hypotheses, as long as there was no evidence of actual inflammation within the urinary channel, are now not appropriate, even tentatively. Instead of a reserved diagnostic approach to the urinary tract itself, taking account first of the various possible extra-urinary causes of vesical disturbance noted above, the procedure must be reversed. The investigation should now begin within the urinary apparatus, and only secondary consideration should be accorded the accessory factors, even when they are definitely present. In other words, when vesical disturbance is co-existent with a pelvic tumor, for instance, and no pathologic elements are present in the urine, and no other etiology is suggested by the general examination, it is safe to presume a connection, and to act accord-

ingly, reserving exploration of the urinary tract until later in the event of persistence of symptoms after removal of the tumor. But when pyuria is added to the picture, the tumor withdraws from the diagnostic field until a complete urological survey discloses the site and origin of the inflammation. This survey may reveal nothing of essential significance and may result in restoring the tumor to a position of primary importance in the etiology. On the other hand, it may bring to light a coincident renal or other lesion of greater surgical significance than the tumor itself. The surgeon may then remove the tumor if he pleases but he will not be blind to the fact that adjacent pathology of equal moment is awaiting his attention before he can cure the "cystitis" which initiated the inquiry.

Many mistakes are made in situations similar to this. Pelvic pathology in women contributes largely to vesical symptomatology, but probably not to the extent currently supposed. The gynecologist is often surprised at the absence of bladder disturbance in patients presenting gross pelvic masses; this is not the rule, but neither is it uncommon. Least of all is it likely that an uncomplicated uterine displacement will frequently cause serious bladder distress. Yet there is in every series of cases the regrettable list of those who, because of vesical disturbance, have had uteri suspended, even in the presence of a pyuria, which should have warned the operator to direct his attention elsewhere.

It will be borne in mind that a complete, not a partial, urological survey is advanced as the absolute requirement in this connection. If, in the hypothetical case submitted, the presence of pyuria leads the observer away from the tumor to the urinary tract but no farther than the blind diagnosis and treatment of a supposed, and possibly existent, cystitis, the situation has been but slightly improved. The cystitis, like the tumor, may actually be present; but again, like the tumor, it may be (and usually is) of purely secondary importance. Before its true relationship to the fundamental pathology present can be disclosed, a much more comprehensive study is essential, and this is possible only by means of the cystoscope.

It cannot be denied that in certain rare instances, a true primary, uncomplicated cystitis presents itself, but the urologist who witnesses the numerous disasters following in the wake of such a diagnosis, when unsupported by cystoscopic data, makes this admission with reluctance; he would prefer to be in position to assert that no such thing is possible and that invariably bladder disturbance, associated with pyuria, is simply an expression of some other underlying condition. Since he cannot reasonably and truthfully do this, he is willing now and then, after a careful general examination, to countenance a preliminary and tentative assumption that the inflammatory process of a given case is local to the bladder when the data seems to point definitely to this as a possibility. No attempt is, therefore, made to insist that every case of vesical distress, accompanied by pus in the urine, should be peremptorily rushed into a cystoscopy. It will usually be found that cystoscopy is eventually necessary, but at the outset the patient may reasonably have the benefit of the doubt, provided a specific time-limit is set for the experiment. If the case is actually one of primary cystitis, it will rapidly and permanently clear up under simple local and general treatment. After ten days or two weeks of such treatment, the persistence of pyuria always means additional pathology requiring independent consideration.

Whether cystoscopy is done then or later is a matter of individual choice, provided the ultimate necessity of it is recognized in the event of continued persistence of pyuria. Many cases of pyelitis, upon which pyuria often depends, will yield to simple medical treatment, making cystoscopy unnecessary; many others will not; and there is always the danger that a grade of pathology more complex than a simple pyelitis may be present. Consideration of the treatment of pyelitis would lead into a debatable field not embraced in this paper. In spite of all opinions to the contrary, the writer has always emphatically leaned toward the instrumental treatment of pyelitis, and hence, in a situation such as that pictured above, it has not been his custom to defer cystoscopy, even in acute infections, after the preliminary trial period has demonstrated the inefficiency of more simple measures to control the situation.

When such cystoscopy is undertaken, the true urological picture will usually unfold itself clearly. As indicated earlier in this paper, no cystitis whatsoever may be present though the urine contain much pus; on the

other hand, any degree of actual inflammation of the bladder may be visible. A further search, which will usually embrace the entire urinary tract, will then reveal the condition producing this symptomatic cystitis, or this pyuria if no cystitis be present. It is unnecessary to attempt to discuss in detail the various findings that may ensue. The underlying lesion may lie within the bladder, or below it, or above it. It is most commonly found to be some type of calculous or non-calculous renal infection, varying in grade from a simple pyelitis to an advanced pyonephrosis. Not infrequently, tuberculosis of the kidney will be uncovered; occasionally a neoplasm with degeneration and secondary infection. Often stasis of urine with small or large residuums will be found at the bottom of the trouble—due to stricture of the urethra, or enlargement of the prostate, or cystocele in the female, or stricture of the ureter, or tabes. In many instances chronic infections of the posterior urethra, prostate, and seminal vesicles will appear as the chief etiologic elements; the possibility of non-specific prostatitis must be borne in mind here. Tumors and sub-mucous or other ulcers of the bladder may have to be considered, though, if they alter the urinalysis at all, they usually express themselves with hematuria rather than pyuria. In rare instances a foreign body will be discovered; the writer has recently cured a case of intractable "cystitis" by removing from the bladder of a male patient two large, encrusted boluses of peppermint chewing gum; another by extracting a white-headed pin from the urethra. Now and then the cystitis will appear as the only lesion in the urinary tract proper and will represent a direct extension of an inflammatory process in the female pelvic organs, usually with an accompanying peri-cystitis.

When one contemplates this array of possible causes of cystitis, the futility of blind medication of the bladder becomes strikingly obvious, the danger of ill-advised surgery very real and significant. Not infrequently the time lost while this misdirected energy is demonstrating its inadequacy means the difference between the conservation and the loss of a kidney; sometimes the difference between life and death. Surely when issues of such vast importance may be at stake it is not going too far, in the interest of the helpless patient, to insist that the consideration of the symptom "cystitis" be approached with greater care and circumspection. A few cases chosen at random will emphasize this thought:

Case 1.—Mrs. A. H. W., white, age 33. September, 1919.

About year previously developed pyuria, frequent urination, tenesmus and other indications of cystitis. Went to surgeon who found uterine displacement and considered its cause of trouble. Advised operation, which disclosed also chronic pelvic inflammation. Removal of tubes and suspension of uterus failed to clear up bladder distress, which continued so severe that six weeks later a vaginal cystotomy was done. Subsequently, the fistula showed a tendency to close and had to be reopened. Drainage gave relief for a time, but symptoms soon recurred with all their intensity and patient now comes for investigation of urinary tract.

Cystotomy opening closed temporarily with purse string and cystoscopic examination made. Urine full of blood and pus and bladder would hold only about two ounces of fluid. Examination very difficult. Left ureteral orifice small and normal. Right retracted, large, excavated, emitting streams of pus. Right kidney practically functionless. Left perfectly compensating with function more than twice normal. Right pyelogram showed typical pyonephrosis with evidence of destruction of renal substance. Operation: Right nephrectomy.

Primary diagnosis: Cystitis secondary to uterine displacement.

Correct diagnosis: Pyonephrosis.

Case 2.—L. L., colored, age 23, married, para 4. November, 1919.

Trouble began about year ago with weakness, loss of appetite, scanty and frequent urination, and tenesmus. Sometimes passed blood and mucus and had involuntary evacuations of urine. Five months later went to doctor, who found womb coming down and lying on bladder, which he considered responsible for her trouble. Underwent operation for suspension of womb, but got no relief; on the contrary, has become steadily worse. Now has almost constant desire to void with tenesmus and pain; temp. 101°; white cells 20,000; polys. 77%; urine loaded with pus; no tubercle bacilli on stain.

Cystoscopic: Capacity about ½ ounce. Extensive shaggy ulceration. Heavy sediment. Right ureter finally catheterized after much difficulty. Left not located. Pure, thick pus from right side. Two-hour function test with catheter in right ureter and rubber catheter in bladder. Function on right side 0; on left 80%, showing excellent compensation. Right pyelogram: Typical pyonephrosis. Operation: Right nephrectomy.

Primary diagnosis: Cystitis secondary to uterine displacement.

Correct diagnosis: Pyonephrosis.

Case 3.—Mrs. N. M., white, age 37, December, 1923.

Came complaining of frequent, burning urination. Trouble began a year ago and surgeon undertook to relieve it by a pelvic operation, which did her no good. On the contrary, she grew slowly but steadily worse. Has just come out of a hospital, where for eight weeks she has been under treatment for cystitis. This treatment consisted of bladder irrigations, which caused her much pain. Now voiding more or less constantly with much burning and tenesmus. Cystoscopic exploration of bladder showed ecchymotic, granular and ulcerated areas suggestive of tuberculosis. No. 7 catheter passed to right pelvis; good flow of clear urine with normal indigo-carmin output. Region of left orifice obscured by clots

and small ulcers and after prolonged search os could not be located; very faint blue haze indicated practically negative function. Bladder urine loaded with pus and tubercle bacilli. Right kidney urine negative for pus or bacteria of any description.

Primary diagnosis: Cystitis.

Correct diagnosis: Left renal tuberculosis with dead kidney.

Case 4.—Mrs. V. C. A., white, age 33.

During latter part of a pregnancy in 1925, developed frequency of urination and some pyuria but no renal pain. Was delivered in April, and about two weeks later began to have muscular contractions and straining after voiding. Urine continued to contain pus. In spite of treatment with urotropin, she grew worse and two months later bladder irrigations were started. From these she obtained considerable relief. In July, a cystoscopic examination was made in Japan; two small healing ulcers were noted; the ureters were not catheterized; the cystoscopist observed clear-looking urine coming from the orifices, and presumed, without further investigation, that the kidneys had no part in the production of the pyuria. The relief obtained from bladder irrigations was not permanent. When patient came under observation of the writer (October, 1925), she was voiding about every forty minutes with much local distress, and her urine was loaded with pus. Cystoscopic examination of the entire urinary tract on both sides demonstrated a normal right kidney and a tuberculous left kidney. Nephrectomy was done shortly thereafter.

Primary diagnosis: Cystitis, cause unknown.

Correct diagnosis: Tuberculosis of left kidney.

Though the commoner causes of vesical disturbance, with or without pyuria, are relatively few, the possible causes are so numerous that no attempt whatsoever has been made in this paper to catalogue them with any pretense of completeness. Unless this fact is emphasized, the obvious omissions in the number of those specifically mentioned may occasion some comment. The object of the writer, however, has not been the comprehensive consideration of the etiologic, pathologic, and therapeutic aspects of bladder inflammations and irritations; on the contrary, he has touched here and there just sufficiently to accomplish—or to hope to accomplish—his real purpose, namely, the reduction of this manifestation of disturbed physiology to its proper perspective in the estimation of any clinical picture in which it may appear. In conclusion, therefore, he reverts to the title with which he introduced the discussion.

Cystitis is a symptom. To exalt it to the dignity of a disease will very occasionally express the truth but more often will lead to disaster and sometimes death. In the apt words of Caulk, a thorough and capable observer:

"The diagnosis of cystitis is frequently based upon its symptoms, namely: frequency, pain, and pus in the urine. These, however, are entirely insufficient, and this superficial diagnosis is reponsible for many of the destructive kidney lesions. I know of no other term in urology which is more abused than the much overworked cystitis. It must be repeated that infected urines do not represent cystitis until infections of the other genito-urinary organs have been ruled out by a thorough and scientific investigation. With our present up-to-date facilities for arriving at a prompt, clean-cut, accurate diagnosis of urinary disease, it seems nothing less than a crime that so many individuals are subjected to blind therapy."

NOTES UPON CERTAIN BORDERLANDS OF PATHOLOGY.*

By JOHN W. PRESTON, M. D., Roanoke, Va.

It has been said[1] that medicine in the middle of the last century was dominated by structural pathology; in the last quarter of the century by bacteriology; and in the present day by the body functions and by chemistry.

To properly evaluate these milestones of progress is difficult for one in active practice. They are typical of the divergent views alike of different periods, and of workers in different fields of medicine.

The surgeon, having to do mainly with structures and gross pathology, tends to grow into the attitude of mind that ignores function and perhaps undervalues the multiform subtle agencies other than gross, or even cellular tissue changes, which mark the line between health and sickness.

On the other hand, it is a matter of not infrequent observation that the man who does no surgery, who has the mental and subjective symptoms constantly borne in upon him, is too prone to place undue dependence upon Nature's recuperative processes and, by an over-confidence in such powers, allow function to pass into pathology.

Between these viewpoints there lies a twilight zone, a sort of *terra incognita*, peopled by flickering will-o-the-wisps and fleeing phantoms, which is as yet but too little charted. It is my purpose to discuss briefly a few of these.

To illustrate: He who has made a diagnosis of hysteria in early stages of brain tumor, and watched it develop till signs are typical, or,

*Read before the Southwestern Virginia Medical Society, at Roanoke, Va., March 30-31, 1926.

1. Henry A. Christian, Oxford Medicine, Vol. 1, Page 5.

conversely, has made a diagnosis of brain tumor in a case of hysteria, needs no reminder to exercise all his diagnostic skill and acumen when a similar case again presents itself, the one grossly pathological, the other as we still conceive it purely functional, yet each in its incipiency with certain symptoms in common with the other.

Of a similar type is the functional vomiting of pregnancy, as relates to the vomiting of a pregnant woman incident to structural changes in the liver or kidney.

In coming to consider the disorders which may properly be classed as borderline, one is impressed with the long list of these which within the past two decades have through better means of study taken their places among those of definite diagnosis and known pathology.

In this latter category fall certain types of cardiac disorders, which have yielded to graphic methods of study; the differentiation of the early stages of exophthalmic goitre from functional neurosis and tuberculosis, by the aid of metabolic estimations; the diagnosis of doubtful cases of syphilis through serum reactions; the differentiation of inflammatory from non-inflammatory processes by blood counts; of diabetic conditions by blood sugar estimations; of comas by blood-urea examinations; blood stream infections by blood cultures; and, finally, the indispensable aid of the X-ray in the differentiation of function from pathology in the gastro-intestinal tract.

But what of the yet unsolved borderland disturbances that vex us? Among the foremost is that of colloid and adenomatous goitre. Who among us fails to recall cases of goitre, lasting an ordinary lifetime, with apparently no symptoms? Yet over against these is the type of case, falling within the confines of this paper, which goes on for years with an occasional slight attack of cardiac irritability, a nervous upset now and then, periods of general weakness, yet carrying on, with now a slightly increased metabolic rate, again a normal rate, and yet again a subnormal rate. At least one such case I have personally seen suddenly flare up as an unsafe surgical risk and die toxic.

Yet another case is that of a man, now aged sixty-three, whose very slightly enlarged thyroid I have had an opportunity to watch over a space of some ten years, during which time there were periods of apparent normal health, alternated with those of cardiac disturbance, mental and emotional stresses of mild character, none of which were sufficiently definite in the earlier stages to warrant a positive diagnosis. The removal of the thyroid two years ago resulted in a complete restoration of health.

The point in all this is the speculation as to where the borderline of health exists in the average case of enlarged thyroid in which no outspoken symptoms are manifest, and how correct is the doctrine of those who hold that every goitre case passing the age of forty should have the gland enucleated; and, on the other hand, whether medical men are doing their full share in searching out and treating the underlying causes when the increasing size of the gland is first noted. I here hazard the opinion that there are more such cases at the present moment than we commonly believe.

In the matter of focal infections, there is now no argument as to those that are outspoken, yet the teeth, tonsils, sinuses and gall-bladder still present borderline problems of magnitude. A case in point is the not infrequent disturbance in the gall-bladder region following systemic infections, such, for instance, as were common during the mild epidemic of influenza last spring; likewise, certain other not uncommon digestive disturbances, with or without a moderate amount of tenderness in the right hypochondrium. The decision under these conditions as to whether the gall-bladder be the primary or secondary focus of infection is no easy task, for, even with the viscus exposed, the surgeon is perplexed as to exactly the type that requires removal. The present indications are that the liver and its accessories are again about to claim their pristine glory as a chief among organs, and it may, indeed, be that it is subject to more functional disturbances than pathologists have thus far demonstrated. Whether the various functional tests now in the stage of development will place our feet on firmer ground is a hopeful, and one may say promising, speculation; yet, let it be clearly understood, this is no plea for a reversion to the drastic calomel days of the past.

The question of blood pressure readings is of perennial interest. Of its own right its varia-

tions are not disease, yet the intricacies of the problem are so deep it seems exceedingly difficult for medical men to get away from the firmly rooted idea that a low pressure must for its own sake be raised, and that a high pressure must be lowered.

The particular observation which I wish to make in reference to blood pressures is that, in my own routine work, I find the readings in apparently normal individuals somewhat lower upon the average than those usually accepted as normal. Indeed, I oftener find the systolics below 110 than above 115 and diastolics oftener below 70 than above. That the majority of these observations are made upon indoor workers may account for the discrepancy.

What of the underlying causes of constant blood pressures above 150 systolic with a diastolic of 90 or 100? Is the threshold of pathology being reached with these figures? In this a vast field for research is opened up, and it is assuredly here that we are today missing a great opportunity for accomplishment of real good through ignorance of the cause of at least one type of high blood pressure, that of essential hypertension.

In the consideration of borderland conditions, having to do with dysfunctioning of the endocrines, individually and collectively, such a maze of unproven theories are presented, I shall merely mention them as relates in a causative way to the condition of obesity, which latter, indeed, is exceedingly difficult to class as between health and disease.

Whether the obese individual may owe his avoirdupois to heredity, over-eating, habits of ease and luxury, which includes the automobile, or to disordered endocrines, is but too often a speculation; but, however it may be, it is a startling fact that one seldom sees an over-nourished individual reach the age of seventy, the majority of these, in fact, dying before the age of sixty-five, if my observations be correct. The two systems which suffer most in carrying the adipose load may truthfully be said to be those of the circulation, and those having to do with carbohydrate metabolism, yet of all these it is a matter of common observation that the end usually comes in a circulatory catastrophe.

In the above connection, I have already spoken of instrumental aid of cardiac diagnosis, yet what of the patient who has been subjected to the most careful tests with negative results and suddenly dies of cardiac thrombosis?—a condition comparable to that of the individual whose symptoms are diagnostic of cerebral arteriosclerosis, yet whose eye grounds are normal, and whose blood pressure is normal. These are alike borderland conditions which impress upon us the fact that, however much help may be obtained from accessories, the court of last resort in these diagnoses is the utilization of one's faculties of observation and his fund of experience.

There is yet another class who are not sick, neither are they in good health. I refer to the loosely jointed spare individual of soft muscle and unstable nerves, the class who, either from a low pain threshold or other intangible cause, magnify their ills, which run the gamut from the typical psychasthenic, through circulatory asthenia, to gastric or genital neuroses. This class really suffers much more than they are credited, and inflict real mental torture upon the practitioner who attempts to treat them, yet whose stabilizing guidance they sorely need.

Outspoken patients of the class here mentioned are easily recognized, but grading between them and well-balanced individuals is a large class who are perhaps just a little queer, but who stand ready to break when a strain comes to which their low resistance is unequal.

As relates to this latter in particular, may I not here focus attention upon an unprecedented biological experiment at this moment in progress, that of the ultimate result of nicotine poison upon the progeny of the future American mother.

In conclusion, it would seem that we would do well to now take stock and appraise the importance of the more obvious borderland conditions, such as above mentioned, and, when fully recognized, devote ourselves more assiduously to an investigation of the underlying causes and to their prevention as well as cure.

To be specific, I would direct attention—

First: To maintaining the present interest of the public in prevention of adolescent goitre and, this period passed, to the more careful study of the borderland conditions underlying the types of goitre which develop in later life.

Second: A better appraisal of the etiological factors having to do with over-nutrition,

particularly as applies to lack of exercise incident to the automobile, and the growing habit of over-feeding.

Third: The earlier recognition of types of asthenia and the training of parents relative to the importance of the conservation of the nervous system of the growing child.

Fourth: The recognition of the fact that between fair health and maximum health there is a borderland, and that the full attainment of good health is dependent upon the wise counsel of the physician, as well as upon his medical ministrations.

OBSERVATIONS ON CARDIAC PAIN.*

By J. MORRISON HUTCHESON, M. D., Richmond, Va.

Among the several manifestations of heart disease, none has received greater attention than pain. So impressive has this single symptom been that for a century and a half angina pectoris has been regarded as a distinct cardiac affection whose diagnosis, prognosis and treatment rests largely if not entirely upon the character of the pain produced. In fact, the term angina has been so amplified and subdivided as to include a large group of allied terms, of which pseudo-angina, false angina, vasomotor angina and angina *sine dolore* are but a few examples, all designed to indicate the condition of the patient as determined by the particular kind of pain he has.

As knowledge has advanced concerning pathological changes in the heart in their relation to symptoms and as new methods for their detection have been discovered, it has been gradually realized that such classifications with their implied meaning are superficial and inadequate. Their habitual use leads to looseness and inaccuracy in diagnosis, unnecessarily alarming prognosis, and useless or harmful therapy, and at the same time violates the important principle of thinking in terms of pathology. Pain as a sign of heart disease is of great importance, but a clearer idea of a patient's prospects and needs is to be had from a conception of the kind of heart that produces the pain than from the character, distribution and degree of the pain itself.

Much has been written in the attempt to explain the mechanism by which cardiac pain is produced, and "no less than eighty hypotheses have been collected on this subject" (Levy). The idea of coronary disease, which originated with Jenner, the hypothesis of tension in the first portion of the aorta advanced by Allbutt, and the view held by MacKenzie that pain is an expression of myocardial exhaustion, are all worthy of earnest consideration, yet the facts oppose accepting any one of these conditions or any other anatomical or physiological disturbance yet discovered as the origin of all cardiac pain.

The peculiar character and distribution of cardiac pain is perhaps more easily understood than the manner of its initiation. It is well known that the nerve supply to the heart comes from the autonomic system and that it has no sensation as do structures supplied by the cerebrospinal nerves. The heart, like the stomach, can be cut or handled without producing pain, but violent contractions of the stomach or bowels do cause pain, but often in a different locality from the contracting muscle. In the embryonic vertebrates the spinal nerves are distributed to corresponding segments of the trunk, but as the limbs grow out they carry with them portions of the nerve trunks, so that the original nerve distribution is greatly changed in the relation of certain regions to cord segments.

It is also clear that stimulation of a sensory nerve at any point in its course affects the brain in the same manner as stimulation of the organ supplied by the nerve, and the resulting sensation is that of disturbance in the organ itself. When stimuli originate in the heart, they are carried to the spinal cord through the sympathetic by way of the cervical ganglia, but on reaching the cord are diffused to neighboring nerve cells. These respond to the stimuli in accordance with their special function, sensory nerves causing in the brain a sensation of pain in the locality they supply and motor nerves causing a contraction of their muscles. This conception of the nature of cardiac pain (MacKenzie and Head) is quite consistent with facts and has received support not only from the results obtained from the operation of sympathectomy, but also from certain phenomena observed during this operation.

From the clinical standpoint, patients with pain referable to the heart might be placed in three groups: (1) those with classical angina; (2) those with the picture of acute coronary

*Read before the Southside Virginia Medical Association, June 8, 1926.

thrombosis; (3) those with atypical pain the origin and significance of which must be determined by other features in the history and examination.

The first group is easily recognized from the description of the attack given by the patient, —precordial or substernal pain with a tendency to involve a shoulder and arm, usually the left, constriction, suffocation, sweating, a sense of impending death. These symptoms, induced by exertion, emotion or over-eating and relieved by rest, give a picture that is not often misinterpreted. But a diagnosis of angina is no more than the recognition of a symptom-complex of probably grave heart disease including an uncertain prognosis and the likelihood of sudden death. Some patients may survive repeated attacks for twenty years, as did John Hunter, while others succumb to the first seizure. To distinguish the rapidly fatal case from one with many years of useful life is at times a difficult task but one that should be undertaken.

Death in the majority of patients who have angina results from congestive heart failure, the attacks often ceasing with the advent of broken compensation. Most of those dying in an attack show acute coronary thrombosis. Seventy-five per cent of autopsies on patients with angina reveal either coronary obstruction or aortitis or both (Cabot). It is evident, then, that the prospects of the individual patient, so far as life is concerned, depend upon the likelihood of gradual myocardial failure or sudden coronary obstruction, and predictions as to his future are to be based upon the condition of his heart muscle and particularly his coronaries rather than upon the fact that he has angina.

When an attack of angina is prolonged for hours and not relieved by rest, nitrites or even morphine, it is probably due to plugging of a main coronary or one of its branches. The pain in this condition is substernal or epigastric, is accompanied by vomiting, shock and collapse, and, as there is usually fever and leucocytosis, it may be easily mistaken for acute disease below the diaphragm. Though death commonly attributed to "acute indigestion" is a frequent outcome of such an attack, a considerable number of patients survive and may, through a good collateral circulation, regain a fair degree of myocardial efficiency. It is important that the signs of coronary thrombosis be appreciated in order not only that useless and dangerous abdominal operation be avoided, but also that every protection be given the heart through the critical period of damaged coronary circulation. Unlike angina, the attack is usually accompanied by definite cardiac signs, such as rapidity, arrhythmia, weak first sound, falling blood pressure or, when infarction occurs on the anterior wall, an evanescent pericardial friction.

A business man of 66 consulted me in August, 1920. For two weeks he had been having typical angina but not severe enough to require treatment. Examination showed a rather large heart, normal blood pressure, definite sclerosis of peripheral and retinal vessels, and changes in the electrocardiogram indicating coronary narrowing. In November, 1920, he was seen in an attack of terrific substernal pain lasting thirty-six hours and requiring frequent hypodermics of morphine which gave little relief. The heart was fibrillating and the blood pressure was much lower than had been previously recorded. He recovered from this attack, and normal rhythm returned, but his cardiac reserve was greatly diminshed and the electrocardiograph signs of coronary disease persisted. In November, 1924, he succumbed to an attack identical in character with the one previously described. This was undoubtedly a case of coronary sclerosis with occlusion, which was survived for four years to be followed by another with fatal result.

Pain of such a character as to suggest a cardiac basis is a very common complaint. It may be precordial, substernal, epigastric, or in the arm alone; it may be the principal trouble for which advice is sought, or appear casually in the history as the result of questioning. It may be mild or severe, the degree having no relation to the gravity of the underlying disease; it may occur alone or accompanied by a variety of other symptoms of greater or less significance. "One should make a careful analysis of the characteristics and nature of the pain present. This initial procedure will orient the investigation *a priori* in some particular direction, but, however searching the analysis may have been, it will never lead to a sound diagnosis which can only be established by an objective examination of the patient" (Martinet). The paucity of obvious physical signs

in many patients with precordial pain is proverbial. Investigation must, therefore, be carried out with the greatest care and thoroughness with particular search for evidence of those lesions with which pain is known to be commonly associated. A review of all the clinical conditions with which precordial pain might possibly be associated would be time-consuming and unprofitable, but, so far as the heart is concerned, the vast majority of cases occur in a few disorders.

Any patient with failing myocardium, from whatever cause, may have pain, though, as a rule, it is not a prominent symptom. It is usually a dull discomfort, more or less constant, accompanied by precordial hyperalgesia, and increased by exertion. It is often alleviated by improved compensation.

A considerable number of patients with precordial pain, even at times conforming to the angina type, have to be classified as cardiac neuroses or neuro-circulatory asthenia. They are usually young individuals and are recognized by the presence of other manifestations obviously neuropathic, and the absence of signs of heart disease. Their pain, like their palpitation, appears to be an expression of an oversensitive nervous system.

It has seemed to me that the pain of coronary disease is apt to be epigastric or under the ensiform cartilage and accompanied by a sensation of pressure which is relieved by belching or by soda. It is often affected more by eating than by exercise, and the patient almost invariably looks upon it as indigestion. This is the type in which gall-bladder disease is suspected and in which surgical treatment to the abdomen may be unwisely applied. I have observed five such cases in which operation had been advised, two in which operation was done with fatal results, and one who survived a laparotomy with gall-bladder exploration to die some months later from cardiac failure following infarction. As a matter of fact, coronary disease and gall-stones may coexist, as both conditions are common in elderly people, and the problem of management in such cases is by no means an easy one.

Aortitis, either syphilitic or arteriosclerotic, is frequently accompanied by pain which is apparently produced in the same way as in coronary disease. Where syphilis is demonstrated or where hypertension is present, changes in the aorta may be suspected, but the nature and extent of these changes can only be made out by direct examination.

Tobacco has been credited with producing a variety of cardiac disturbances, but the terms "tobacco heart" and "tobacco angina" are not so frequently seen now as formerly. I have had a few patients in whom tobacco was undoubtedly an exciting cause of pain, but whether it acted primarily or upon a heart already diseased has not been determined to my entire satisfaction.

Broadly speaking, pain, as a prominent symptom, is common in arteriosclerosis and syphilitic heart disease, uncommon in rheumatic disease and other infections except where the condition has progressed to cardiac insufficiency. Arteriosclerosis is most apt to involve the coronaries, syphilis the aorta, but not infrequently it is impossible to differentiate disease in the two localities.

In studying the aorta the fluoroscope is of inestimable advantage and should be employed whenever possible as it will bring to light deformities impossible of detection by other means. When evidence of possible coronary disease is sought, the electrocardiogram is invaluable. Though some aspects of this method of examination are still under discussion, it is safe to state that the electrocardiograph gives the best objective information obtainable as to the presence or absence of disease in the myocardium.

Cardiac pain often requires special treatment in addition to that applied to the underlying disease. In certain instances a careful analysis of the history, with modification of the special circumstances that act as exciting causes, brings relief. The iodides in syphilitic aortitis, the nitrites and morphine are well known. I have found erythrol tetranitrate useful and have gotten the impression that it is superior to the other similar preparations, especially as regards the duration of its action. Theobromin, probably through its effect on the coronaries, is often quite helpful both in relieving pain and preventing its recurrence.

In recent years, a good deal has been said about the operation of sympathectomy for the relief of cardiac pain. This operation attempts to sever the sympathetic connections between the heart and spinal cord, thus preventing impulses arising in the heart from reaching the

cerebrospinal system and causing pain. Obviously, it cannot influence primary cardiac pathology to the extent of preventing myocardial failure or coronary occlusion, and must be looked upon as a symptomatic measure. There are certain patients whose pain is a most distressing and disabling symptom and whose prospects for life otherwise are good. In these patients I believe the operation to be indicated. It contributes little to the danger of the disease, and my experience with it convinces me that it may be of tremendous advantage in properly selected cases, as it not only relieves pain, but by doing this it indirectly prolongs life. It would be unfortunate, however, for this procedure to be applied indiscriminately to cases of angina, in most of whom it is, to say the least, unnecessary.

A railroad official of 51 was first seen in November, 1921. He complained of shortness of breath on exertion and slight precordial pain which occurred on exercise and radiated to the left arm. Nothing abnormal was made out on examination, and by moderate restriction in exercise and diet he remained reasonably comfortable until the fall of 1924, when his pain became more frequent and more severe. Nitrites gave only relative relief, and a month's vacation with almost complete rest was of little benefit. In March, 1925, the pain was so troublesome as to compel him to give up his work. No evidence of grave cardiac pathology being discovered, sympathectomy was advised and done by Dr. Coleman on April 21st. Ten days later, he went to work and has since been entirely free from pain. There has been frequent tightness in the chest and a sensation of gastric distention, both of which are relieved by nitrites, but no discomfort has occurred sufficient to interfere with his regular duties.

In this rather sketchy discussion, an attempt has been made to discourage the use of the term angina pectoris as meaning any particular variety of cardiac disease. By careful analysis of each history and the application of appropriate means for detecting the cardio-vascular pathology with which pain is associated, it is believed that a greater degree of precision in prognosis and treatment will be reached.

209 *Professional Building.*

PARALYSIS OF THE LEFT RECURRENT LARYNGEAL NERVE IN ASSOCIATION WITH MITRAL STENOSIS.

By E. U. WALLERSTEIN, M. D., Richmond, Va.

Mrs. L. C., white, female, age 25, married, was first seen at the Tuberculosis Dispensary of the Richmond Bureau of Health in November, 1924. The history is as follows:

C. C.—Hoarseness.

P. I.—No cough, no hemoptysis, no night sweats, no loss of weight. In 1918, had severe attack of influenza and suddenly became hoarse. The condition of the voice has remained the same since this time. No pain, no difficulty in swallowing. At this time she was told that she had heart trouble, and strychnine was prescribed. Since this, she has had dyspnea on moderate exertion, no orthopnea.

P. H.—Ear, nose and throat negative except for tonsillectomy done in September, 1920, for relief of hoarseness.

Dr. Ezekiel examined the patient at the dispensary and reported no evidence of tuberculosis, but a diagnosis of mitral disease was made.

Examination of Larynx.—The voice is very husky. The left vocal cord is fixed in the cadaveric position. There is compensatory overaction of the right cord during phonation.

X-ray examination of chest was negative for tuberculosis. Sputum negative for tuberculosis. Blood Wassermann negative.

The patient was referred for electrocardiographic study to Dr. M. Hutcheson, who reported as follows:

"Tall, thin woman, 20 per cent below standard weight. Lips and finger tips show tinge of cyanosis. Breathing free when lying flat.

"Pulse regular, 68 to minute. Blood pressure 95/58. Venous pressure, right arm, 16 m.m. water; left arm, 20 m.m.

"Vital capacity, 2.100 c.c.

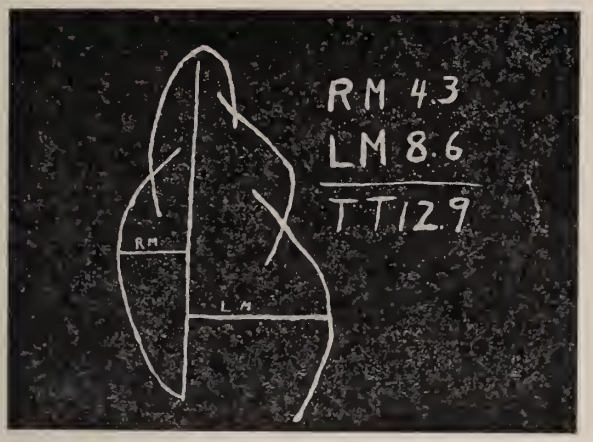
"Apex felt in fifth interspace. Left border 9 c.m. and right border 3 c.m. from mid-sternal line. Above and to the right of the apex a distinct thrill is palpable, apparently diastolic in time. Over the entire precordium a rough systolic murmur is audible, and at the third left interspace a fairly loud late diastolic crescendo in character. There is moderate accentuation of the pulmonic second sound.

"Lungs negative.

"Abdomen negative.

"No edema of lower extremities.

"Impression: Mitral stenosis (rheumatic). Compensation doubtful."



Orthodiagram of the Heart.

Electrocardiogram shows right ventricular preponderance. Q. R. S. complexes are normal. P-wave slightly flattened in Leads ii and iii. Conduction time .18 second. T-wave upright in all three Leads. Rhythm normal throughout.

X-ray examination of heart and aorta showed measurements of the heart to be as follows: R. M.—4.3 c.m.; L. M.—8.6 c.m. T. T.—12.9 c.m. Normal T.T. for patient weighing 124 lbs.—12.3 c.m. Increase in present case —.6 c.m. In the region of the left auricle there is an extremely marked prominence in the heart silhouette. This prominence is greater than we have ever seen in a case of auricular enlargement. Aortic shadow normal, shape of heart normal except for the auricular prominence.

Conclusions—According to the measurements, there is no appreciable increase in the width of the heart shadow. The prominence of the left auricle is extremely marked and is typical of the findings to be expected in a mitral stenosis.

The patient has been examined at approximately monthly intervals since coming under my observation. There has been no change either in the laryngeal or cardiac condition.

Paralysis of the recurrent laryngeal nerve is a fairly common finding, and is usually due to pressure caused by aortic aneurysm, mediastinal growth, goitre, etc. However, paralysis associated with mitral stenosis is very rare.

Ortner[1], in 1897, was the first to describe the condition. He reported two cases studied at autopsy. Up to January, 1924, Notkin[2] in a review of the literature, was able to find only 74 cases reported.

There is a diversity of opinion as to the exact mechanism of the paralysis. According to the most widely held view, the enlarged left auricle causes pressure on the left recurrent laryngeal nerve, producing either neuritis or atrophy.

Quoting Garland and White,[3] "Ortner believed it was compression of the nerve against the aortic arch by the big left ventricle; Kraus held it to be elongation of the nerve resulting from right ventricular dilatation; Alexander, and later Fetterolf and Norris, claimed that dilatation of the left auricle acts by crowding back the pulmonary artery, which is often dilated."

Notkin advances what would appear to the writer as the most tenable explanation. He holds that the enlarged pulmonary artery, through its own dilatation or through pressure transmitted to it by the left auricle and pulmonary vein, compresses the nerve against the aorta or ductus arteriosus.

Secondary factors may enter by increasing the rigidity of the opposing parts, such as thrombus in the auricle, thrombosis of the pulmonary artery and sclerosis of the pulmonary artery and aorta.

BIBLIOGRAPHY.

1. Ortner. *Wien. Klin. Wchuschr.*, 33:753, 1897.
2. Notkin. *Archiv. Int. Med.*, 33:71, 1924.
3. Garland and White. *Archiv. Int. Med.*, 26:343, 1920.

114 *North Fifth Street.*

REPORT ON YEAR'S WORK IN ENDOSCOPY, UNIVERSITY VIRGINIA HOSPITAL.*

By FLETCHER D. WOODWARD, M. D., Charlottesville, Va.
Department of Otolaryngology, University of Virginia.

Since "endoscopy" has now come to occupy such an important position in the diagnosis and treatment of certain diseases, we have felt justified in presenting a resume of the past year's work at the University Hospital, in order to acquaint you with the scope, application and problems of this particular subject.

To Dr. Chevalier Jackson all honor is due for the development and advancement of endoscopy, and to him and his clinical associates for the dissemination of knowledge whereby

*Read before the Virginia Society of Otolaryngology and Ophthalmology, in Petersburg, April 27, 1926.

others in all parts of the world are able to carry on the work.

There are certain prerequisites which must be fulfilled to perform endoscopy successfully. Among the most important of these are: adequate equipment and training, constant practice, and teamwork on the part of the operator and his assistants.

This paper will deal briefly with the types of cases, so treated, in order to familiarize you with its scope, the problems and results of treatment, and the report of certain cases of particular interest.

Group I.

Abscess Retropharyngeal.—We have found the laryngoscope of great value in the treatment of this condition, and feel that it should always be the procedure of choice, because the patient's head being placed well down over the table end, inspection of the pharyngeal wall can be carried out and the site for incision chosen in a leisurely manner; also the suction tube can be inserted directly into the abscess cavity, all of which minimizes the well recognized dangers in the treatment of this condition.

Case 1. No. 55320.—E. N. T., baby, seven months of age, was treated in this manner and 28 c.c. of pus aspirated. Recovery was rapid and uneventful.

Case 2. No. 50944.—M., adult, fifty-nine years, a diabetic, extremely septic and semi-conscious, with a very large abscess; 175 c.c. of pus was aspirated. This patient improved markedly for a time, but died six weeks later of a mediastinitis.

Group II.

Abscess Laryngeal.—Here again the laryngoscope furnishes us an opportunity to study the larynx and open the abscess directly, wherever it may be,—a procedure that will appeal to all who have attempted to incise them indirectly.

Case 1. No. 55520.—E. N. T., adult, sixty-three years of age. An abscess presenting just above the left cord, with some fixation of the left arytenoid, was incised directly. The larynx was perfectly normal in three weeks' time.

Case 2. No. 54833.—E. N. T., adult, fifty years of age, gave a history of recurrent attacks of hoarseness for the past six months, but lately some soreness in neck and dysphagia. Mirror examination showed a large inflammatory looking mass protruding from the right ventricle, overhanging the cord, about 1 by 1½ cm. in size, and with complete fixation of the arytenoid.

The Wassermann was negative, so, at the time the abscess was incised, a biopsy was done, which ruled out malignancy.

This case illustrates the added advantage of being able to remove tissue for microscopic examination at the same time.

Laryngeal Stenosis.—Under this heading we wish to mention three cases, two of which were due to a post-operative paralysis of both recurrent laryngeal nerves following thyroidectomy. This is a particularly tragic condition, and, as a rule, is not due to faulty technic on the surgeon's part, but to some unknown mechanism, as contracting scar tissue, or what not.

It goes without saying that all goiter patients should have a preliminary indirect laryngeal examination, and if there is a paralysis of either cord, the surgeon will be forewarned.

One of these patients died before an emergency tracheotomy or intubation could be done. The other is still living at the end of twelve months, having refused operation. But we feel that death is always imminent in these cases.

Whenever this condition ensues, a tracheotomy should be done as a precautionary measure, then, if at the end of one year, there has been no return of function, anastomosis of the recurrent stump with the descendens hypoglossi can be attempted after the method of Frazier. Direct ventriculocordectomy is reserved as a last resort.

We also wish to mention our experience with direct intubation in a year old infant who developed laryngeal diphtheria, necessitating intubation. We used the Mosher direct intubation forceps, but found it impossible to disengage the obturator without withdrawing the intubation tube.

In anticipation of some such difficulty, we asked Dr. Royster to stand by with the indirect instrument, and he quickly and successfully introduced the tube after our failure.

Direct intubation cannot supplant the O'Dwyer technic, which can be very quickly done under most conditions. However in hospitals where time is not essential, the direct technic does allow inspection, and aspiration.

and, with a suitable instrument, can be readily performed.

Laryngoscopy.—Direct laryngoscopy is particularly valuable in the examination of infants and young children, as well as those adults in whom mirror examination is unsatisfactory; also, tissue for biopsy is readily obtained, and minor operative procedures are made possible.

We wish to mention the following cases in illustration:

Case 1. No. 55652.—E. N. T., sixty years of age, with advanced pulmonary tuberculosis, and aphonia for one year. The picture obtained by mirror examination of the larynx was that of carcinoma rather than tuberculosis. His Wassermann was negative. We did a direct biopsy, which showed carcinoma with ulceration and secondary infection. This was an instance in which the complete diagnosis could not have been made without biopsy. Mention should be made of two other cases, in which one presented a simple papilloma, and the other, an adult, who had a traumatic left recurrent paralysis and a questionable laryngeal perichondritis. Mirror examination was unsatisfactory, but direct laryngoscopy revealed the absence of perichondritis.

Tracheal Stenosis.—Under this heading, we wish to report two cases of unusual interest from Dr. Royster's service.

Case 1. Autopsy No. 628.—P. S., four years old, was admitted to the hospital in a moribund condition, and died while tracheotomy was being performed to relieve asphyxia. One year previous to admission, the patient swallowed lye, and had had some difficulty in swallowing since that time.

Twenty-four hours before admission, the child suddenly developed signs of asphyxia after swallowing some rather large pieces of meat. Had been cyanotic, dyspnoeic, and growing gradually weaker until admission. Permission for special autopsy was granted to examine trachea and esophagus. The findings were as follows: a rather fibrous stricture of the upper esophagus was found, with a large dilated pouch above, packed with food. This tumor mass was sufficiently large to so compress the trachea as to cause asphyxia.

Case 2. No. 54555.—P., an infant five days old, admitted to the Hospital with a history of dyspnoea since birth, cyanosis at times, and several convulsions on the second day.

Examination was negative except for an extremely large thyroid gland, and likewise thymus.

Tracheotomy was considered imminent, but following the first Roentgen Ray treatment, the thyroid diminished in size so rapidly that dyspnoea and cyanosis were practically entirely relieved by the end of the first week.

The following measurements will be of interest to illustrate the size of the neck: circumference of head 38 c.m., neck 29 c.m., chest 34 c.m., abdomen 33 c.m.

Lung Suppuration.—The treatment of this unfortunate condition is one which requires the closest co-operation of the internist, surgeon and bronchoscopist, to properly classify and decide which type of treatment is indicated for each particular case.

Bronchoscopy will materially shorten convalescence and cure a certain number of these cases; in others, the information obtained and the localization by pneumonography will be of great help to the surgeon. For this purpose bismuth subcarbonate and lipiodol is used.

Case 1. No. 51130—S., a man fifty-six years of age, developed a left lower lobe abscess following an operation for a perforated duodenal ulcer. This patient was bronchoscoped at weekly intervals, being greatly benefited each time. He was discharged nine months ago, and, in a recent communication, states that he is perfectly well and has been free of all symptoms for the past eight months.

In two other patients, we were able to alleviate the symptoms to a certain extent, but, since their condition was essentially surgical, they were transferred to the Surgical Department for operation.

One other case, which was clearly surgical, was only bronchoscoped once for the purpose of obtaining additional information.

Two of these cases were post-pneumonic, and the other followed ether tonsillectomy.

Bronchoscopy Diagnostic.—The bronchoscope furnishes an additional aid in securing data in obscure pulmonary conditions. It is a procedure carried out always under local anesthesia and attended by very little discomfort on the part of the patient. Hence, these patients should always be given the benefit of a diagnostic bronchoscopy. We have been able to render a diagnosis more certain in several cases, referred to us for this examination.

Group III.

Oesophageal Stricture.—A particularly distressing condition occurring most often in children as a result of swallowing commercial lye.

These cases should always receive the most careful attention of the endoscopist, for blind bouginage will invariably result in death. We are indebted to Dr. Gabriel Tucker for the treatment of these cases, by his very successful method of retrograde string bouginage.

We have already mentioned one case resulting in death, but wish to add three others whose progress has been most happy.

Case 1. No. 28076.—S., seven years old, who has been fed through a gastrostomy for three years, had a complete, impervious, three inch stricture of his esophagus, as a result of swallowing lye.

This patient was referred to Dr. Jackson's Clinic, and Drs. Clerf and Tucker, under combined peroral and retrograde esophagoscopy, and with the aid of the fluoroscope, successfully permeated the stricture and passed a string twelve months ago.

This patient was thereafter returned to us, and has been undergoing retrograde bouginage since that time, until now the 28 F. bougie passes readily. His condition has rapidly improved, having gained ten pounds, and grown one inch in the past year, and takes all of his food by mouth.

Case 2.—R. H., age four years. Also a lye burn stricture, having been fed through a gastrostomy for the past two years.

By retrograde esophagoscopy a string was passed ten months ago, and under subsequent retrograde bouginage, his condition has rapidly improved until at present his weight is normal, and he is taking all of his food by mouth.

The third case is that of a negro child, five years of age, who has a partial stricture, a result of swallowing lye, with only slight pouching. She has never needed a gastrostomy, and with occasional peroral esophagoscopic bouginage, she is able to eat in a normal manner.

Oesophageal Stenosis.—Under this heading we wish to mention one case of advanced phreno-spasm with marked esophageal pouching and complete obstruction, whose condition necessitated gastrostomy, to relieve starvation and dehydration, before esophageal dilatation could be undertaken.

Oesophagoscopy Diagnostic.—Here again the esophagoscope will furnish valuable information in all obscure esophageal conditions, and by biopsy we can obtain tissue from any location for microscopic diagnosis.

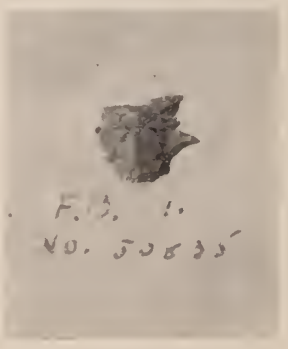
This procedure has been used on a number of cases, among which were syphilis of the esophagus, carcinoma, and several cases of suspected foreign body or tumor. As in bronchoscopy, it is a procedure attended with very little discomfort even though no anesthesia is used.

Group IV.

Foreign Bodies.—We wish to report our experiences with six foreign body cases which have come to us in the past year. Cases I and III have been previously reported in the Virginia Medical Monthly, but we wish to include them here again in the complete report for the year ending May, 1926. We feel particularly happy that all six of these cases terminated successfully.

Foreign Body in Larynx.—Case 1. No. 50835. —Patient, a colored boy three years of age, who, forty-eight hours previous to admission, while eating beans and meat with crushed bone in it, became strangled and apparently aspirated some of the food.

On admission, patient could not speak above a whisper. Respirations were wheezing in character, and there was marked inspiratory and expiratory dyspnoea, accompanied by in-



drawing of the suprasternal notch, supraclavicular and intercostal spaces. Coarse and sibilant rales were heard throughout both lungs, and resonance was slightly impaired.

X-ray examination showed a shadow of increased density in the laryngeal region, thought to be the larynx. Direct laryngoscopy showed a foreign body in the subglottic space

in an antero-posterior position, with some bleeding from the laryngeal mucosa.

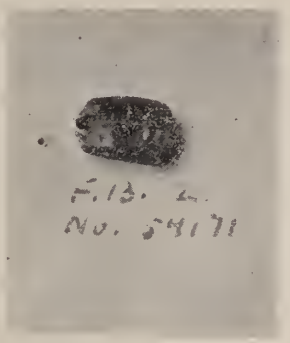
The foreign body was grasped during inspiration with alligator forceps, and removed.

Examination showed an irregular flat piece of bone with serrated edges, about 1 c.m. in diameter.

All symptoms rapidly subsided after extraction, and patient was discharged in three days in good condition.

Foreign Body.—Piece of ham bone.

Foreign Body Right Bronchus.—Case 2. No. 54171.—E. N. T., white boy, six years of age, a deaf mute, found choking in bed by father. A number of grains of corn were noted in the bed, and aspiration of one of these was suspected. Patient admitted to Hospital eight hours later, with a history of several attacks of cyanosis during this time.



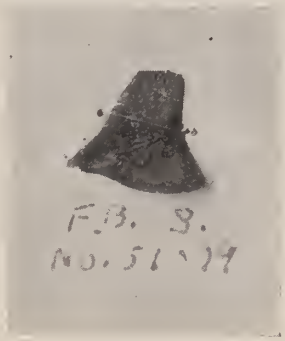
Examination showed marked dyspnoea with wheezing, less marked when quiet. X-ray examination was negative, but, on physical examination, Dr. Wood reported respiratory movements less on right side, diminished breath sounds over right lower lobe, and markedly so over right middle lobe, with a compensatory increase on the left. Fine moist rales were noted over both lungs. Diagnosis: obstruction right lower bronchus.

Bronchoscopy with 5 m.m. tube revealed a profuse mucilaginous secretion with considerable oedema and redness of the mucosa. The foreign body was first noted in right main bronchus, but coughing dislocated it, and it began to range from trachea to right bronchus. On two occasions when in trachea, it produced a complete obstruction, cyanosis became marked, before it could be pushed back into the bronchus. All attempts to grasp it with the side-curved forceps proved futile, due to movement and profuse secretion present. The bronchoscope was slowly withdrawn and the foreign body followed at each cough until the upper trachea was reached. The corn remained at this point, so the bronchoscope was withdrawn and the laryngoscope inserted. On inspiration the corn was grasped with alligator forceps and withdrawn. Shortly after return to ward, an interstitial emphysema appeared, gradually spreading until it involved the neck and lower chest wall,—a condition probably due to a vesicular rupture.

His condition remained good for eighteen hours; then the dyspnoea became so marked, and the mucilaginous secretion so profuse, a local tracheotomy was done. After this, his condition rapidly cleared up, and patient was discharged on the twenty-fourth day, perfectly well.

Foreign Body.—Grain of corn.

Foreign Body Oesophagus.—Case 3. No. 51079.—E. N. T., a nursing white child, eleven months old, had three days previous to admission been given squirrel meat. There was some choking and gagging, and baby had difficulty in swallowing afterwards.



Examination was negative except for dysphagia and occasional regurgitation of food and liquids. X-ray showed a shadow of increased density in upper oesophagus.

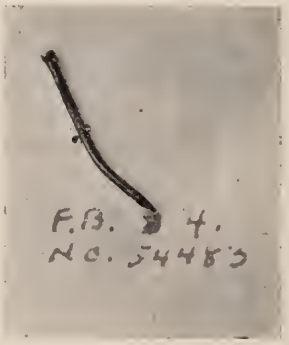
Oesophagoscopy with a 7 m.m. tube showed a foreign body just below the crico-pharyngeus, lying in a transverse position. The foreign body was grasped with side-curved forceps and readily extracted.

The child made an uneventful recovery and was discharged on the next day in good condition.

Subsequent X-ray negative. Foreign Body.—Squirrel bone.

Foreign Body Oesophagus.—Case 4. No. 54483.—E. N. T., colored boy four years of

age, who six hours before admission, came to his mother saying he had swallowed a nail. There has been marked salivation since, and some difficulty in swallowing, but no pain, nor other discomfort.



X-ray showed a small nail lying transversely in the oesophagus at the level of the fifth cervical vertebra, with the tip slightly downward.

Oesophagoscopy with the 7 m.m. tube revealed nail just below crico-pharyngeus. Head was grasped with side-curved forceps and readily withdrawn.

Patient discharged two days later in good condition.

Foreign Body.—Nail.

Foreign Body Oesophagus.—Case 5. No. 54380.—E. N. T., patient is a two year old girl, with a history of having swallowed a button two months ago. Child had been taken to a local physician who failed in an attempt to find a foreign body, and had advised waiting to see if button would be passed by bowel. The patient has subsisted on liquid and soft food since, and, although she has had some difficulty in swallowing, there have been no other symptoms.

X-ray examination with barium meal showed an obstruction at the level of the first and second dorsal vertebrae.

Oesophagoscopy with a 7 m.m. tube revealed a rounded black edge just below the crico-pharyngeus, surrounded by an area of granulation tissue and some pus. After sponging away the blood which came from the granulation, we were unable to see the foreign body again. Fearing perforation, the tube was withdrawn.

A barium meal two days later showed no obstruction at this site, so we surmised that the foreign body had passed on into the lower gastro-intestinal tract.

Four days later, an oesophagoscopy was done for inspection of the old site. This area was noted to be clean, and there was no trace of any invader.

On the fourth day after this, the foreign body was passed by bowel.

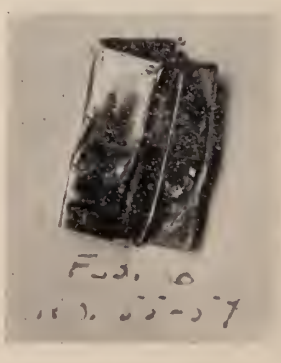
Foreign Body.—Button 2x2 c.m.

Foreign Body Oesophagus.—Case 6. No. 55259.—E. N. T., a white girl four years of age, choked while playing day before admission to Hospital. Playmates said she had swallowed a piece of tin. Mother tried to reach it with her finger, and although she felt it at first, it soon passed beyond her reach.

Local physicians advised eating bread and potatoes, which was promptly vomited, although liquids were swallowed very well.

An unsuccessful attempt was made to remove the foreign body elsewhere, before admission here.

X-ray showed a large opaque foreign body, 2x3 c.m. in size, at the level of the seventh cervical, and first and second dorsal vertebrae in a transverse position.



Oesophagoscopy was done, using the adult anterior commissure laryngoscope. The foreign body was readily visualized just below the crico-pharyngeus, grasped with alligator for-

ceps and withdrawn. Recovery was uneventful and patient discharged on the third day.

Foreign Body.—Folded piece of tin, 2x3 c.m.

104 *East Market Street.*

HUNNER'S ULCER OF THE BLADDER—A REPORT OF TEN CASES

By A. I. DODSON, M. D., Richmond, Va.
From Urological Department of St. Elizabeth's Hospital.

The description by Hunner of the symptoms, appearance and pathology of a so-called "elusive" ulcer of the bladder as observed in eight cases (Hunner, Guy L., "Transactions of Southern Surgical and Gynecological Association," 1914, Vol. XXVII, pp. 247-289; and by personal communication of February 24, 1926) has been confirmed by many urologists; and a sufficient number of cases have been reported by him and by others to establish the disease as a definite pathological and clinical entity. Experience has strengthened the evidence that the disease is a result of a focal infection, but has materially changed the original views regarding treatment.

This paper is the result of our observations upon ten cases of this disease. Four have been previously mentioned, one having been reported in detail ("Frequency of Urination," Virginia Medical Monthly, February, 1925, pp. 674-679). The remaining six were treated during the past twelve months. All of these patients complained of dysuria and frequency of urination, the bladder capacity being materially reduced, averaging less than five ounces. Three of the patients had practically no control, their frequency of urination being so marked that they were confined to their rooms. There was increased sensitiveness of the urethra in all cases and the lumen of the urethra in two was definitely narrowed. All had tenderness just over the pubis, while in four there was constant pain in the pelvic region. Four of the patients had been previously operated upon elsewhere with the hope of relieving the symptoms. Three of these operations were suspensions of the uterus and one was repair of a cystocele. In every instance the urine was macroscopically clear. In two cases there were a few leukocytes found at every examination and the urine of the remaining eight contained at times an occasional red blood cell and leukocyte. Three of these patients gave a history of occasional blood in the urine. In seven of these patients the lesion when seen through the cystoscope was insignificant in appearance, occurring as a small hyperemic patch at or near the apex of the bladder, fairly sharply marked and presenting in the center what appeared to be slight erosions. (Fig. I). In the remaining three the ulcerations were much more pronounced. In one patient who had had three fulgurations previous to admission, there was a large crater-like lesion situated at the apex of the bladder. (Fig. II). Another had a distinct erythematous area about two centimeters in length and surmounted by four small ulcers extending across the anterior wall of the bladder. In one of the patients there were two fairly large ulcers, one situated on each lateral wall. The lesions in this case were about two centimeters in length by one centimeter in width. (Fig. III). The average age of the ten patients was 43½ years, the youngest being 24 years,

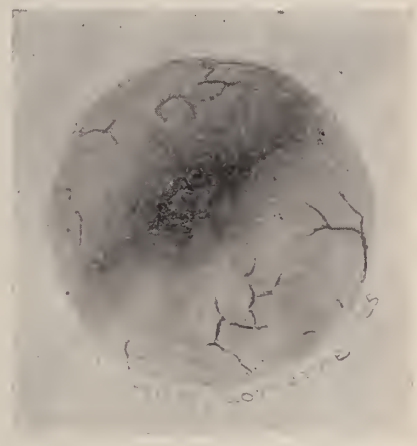


Fig. 1.—Cystoscopic appearance of lesion near the apex of the bladder of about two years' standing.

the oldest 77. The average duration of their symptoms was eight and a half years, varying from one to twenty-seven years. In the majority of instances the symptoms first made their appearance during the third decade of life. The oldest patient, 77 years of age, had only suffered two years.

In Hunner's original report, he expressed the belief that there was some relation between focal infections and these bladder lesions. This opinion has been strengthened by the experimental work of Bumpus and Meisser of the Mayo Clinic, who obtained ulcers in the bladders of laboratory animals by injecting bacteria obtained from abscesses of teeth and tonsils (Meisser, John G. and Bumpus, Her-

mon C., Jr., "Focal Infections in Relation to Submucous Ulcer of the Bladder and to Cystitis." *Jour. of Urol.*, October, 1921, pp. 285-298), and by observing the large number of patients with an elusive ulcer of the bladder who have demonstrable infectious foci.

Careful study of all our patients was made to determine whether any such relationship existed. We found that seven had at the time of examination or previously such infections involving the teeth, tonsils, or sinuses. Two of these patients also had infections of the cervix. The infectious foci, wherever discovered, were treated. In only one instance was there apparent a striking result from such treatment. after discharge from the hospital she was entirely free of her bladder symptoms. At the present time, three months after her discharge, there has been no recurrence of symptoms.

In two patients of this series there were distinct kidney infections. One of these had two ureters on the left side, in one of which there was a stenosis of the orifice. Just at the outer side of the stenosed orifice was a small punched-out ulcer surrounded by considerable edema and congestion. Infected urine was obtained from both the left ureters. The pelvis of this kidney was irrigated at intervals of two weeks for three months. At this time the urine was clear of the infection and the ulcer

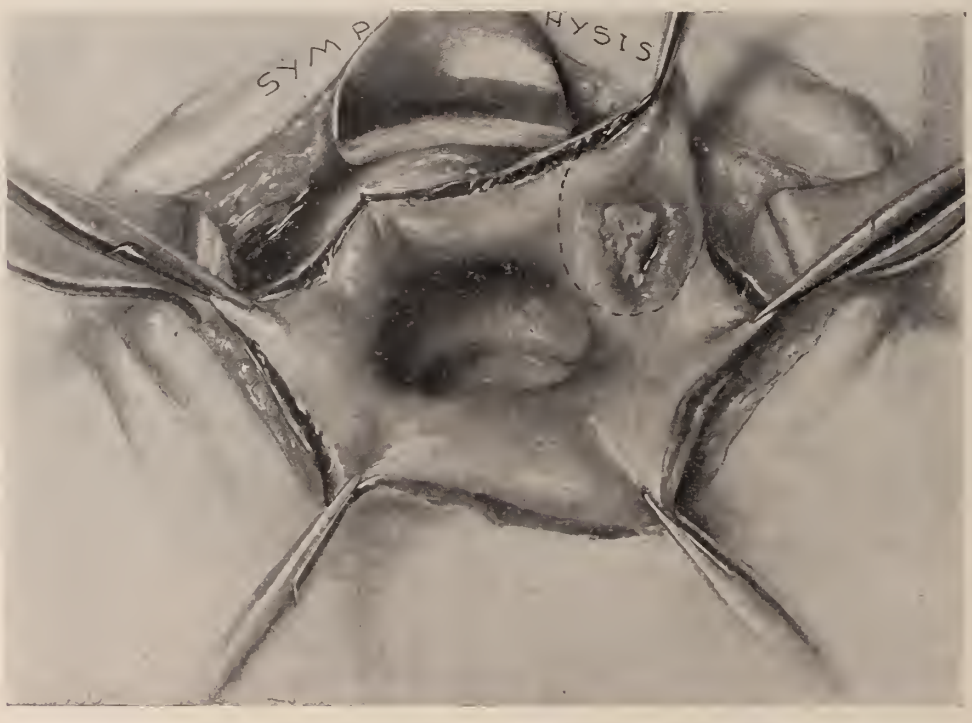


Fig. II.—Operative exposure of ulcer near apex of the bladder. This ulcer had been fulgurated three times during a period of eighteen months. This has very definitely changed the character of the lesion.

Patient No. 9, Miss X., 77 years of age, was found to have four very badly infected teeth. Following the extraction of these teeth she suffered a pronounced reaction, temperature from 100 to 103 for four days, exacerbation of chronic neuritis of the right arm and a definite increase in the severity of her bladder symptoms. She remained in the hospital eight weeks, during which time she was given bladder irrigations and instillations of silver nitrate. She left the hospital slightly improved and has since had no treatment. Thirty days had healed but the patient was only partly relieved of her symptoms. A more careful examination of the bladder showed four small ulcers on the anterior wall in a semicircle about two centimeters from the internal sphincter. A sharply marked area of hyperemia surrounded them. In the other case, kidney infection was bilateral, probably a result of ureteral strictures which were very pronounced on both sides.

In the four patients who were operated upon, the lesion appeared much more clearly defined

at operation than when seen through the cystoscope. There was a well-marked area of hyperemia in which the mucous membrane was raised above the normal bladder surface. One or more small ulcerations were seen on the surface of the lesion. In three cases these areas had more the appearance of a contusion of the mucous membrane than an ulcer. In one patient who had had three fulgurations of the lesion, extending over a period of eighteen months, there was a rather large ulcer occupying three-quarters of the hyperemic area. This ulcer was quite deep and on one side somewhat excavated. (Fig. II). In three of the cases there was only one lesion. In one case there were two separate and distinct areas of inflammation, one on the lower left lateral wall, just above the ureteral orifice, and the other on the right lateral wall just above and behind the right ureteral orifice. The mucous membrane between these two lesions was normal in appearance. (Fig. III). The bladder wall in all cases was distinctly thickened in the area of the lesion and had lost its elasticity. Distention of the bladder with fluid previous to operation caused some bleeding in each case. In two cases there was evidence of inflammation in the prevesical tissues as shown by adhesions to the bladder wall.

Fig. III.—Operative exposure of ulcers, one situated on each lateral wall. In order to remove all the infected area, it was necessary to remove the lateral walls almost to the base of the bladder.

Microscopically the ulcers when removed showed an inflammatory process of long standing. The ulcer-bearing area showed some loss of epithelium, but this was not marked. In the submucosa were newly formed blood vessels packed with red blood cells. Round cell infiltration interspersed with newly formed

connective tissue cells was present throughout the submucosa and the muscular layer.

Considerable uncertainty exists as to the best method of treatment in these patients. In his original contribution on this subject, Hunner assumed that a disease of such chronicity and involving the entire bladder wall was best treated by complete excision of the infected area. This view was also held by other urologists in their earlier cases. As time elapsed such a large percentage of the patients showed a return of symptoms and a recurrence of the lesion that these earlier opinions have materially changed. Hunner states that in a series of 102 cases seen since 1918, 25 of which were operated upon, there have been 8 recurrences. Of his total cases of 44 excisions, one died and there has been a recurrence in 18, or 42 per cent. He believes that the total recurrence will reach at least 50 per cent. His present method of treatment is to remove all possible foci of infection, clear up ureteral strictures, which in his series occurred in about 60 per cent of the cases, and use local medication. In those patients who do not respond to this method of treatment, he advises thorough fulguration of the lesion, and, as a last resort, in cases that do not improve under such treatment, he advises resection of the bladder. Keene states that irrigations and local applications have not been successful in his hands, but rather made the patient more miserable. It is his belief that fulguration should be tried immediately in all cases and that resection should be done in those who do not improve. He says that Braasch has found fulguration disappointing, the improvement lasting only a short time (*Am. Jour. of Ob. & Gyne.*, September, 1925, pp. 380-385). Furniss refers to resection of the ulcer as a formidable operation and thinks that it does not give any better hope of cure or freedom from recurrence than fulguration. He quotes Kretschmer, Rathburn and Hyman as having the same opinion. He reports results of fulguration in six patients with complete relief in five, three of whom had previously had resections. He believes that the greatest relief is obtained and best looking bladders result when fulguration was most thorough. His best results have been in cases fulgurated through a suprapubic incision (Furniss, H. Dawson: *Am. Jour. of Ob. & Gyne.*, March, 1924, pp. 288-291 and personal communication, March 2, 1926).

The lapse of time since treatment in our cases has not been long enough to draw very definite conclusions as to the permanency of results. In four of our ten cases there were resections of the bladder. The first patient operated upon also suffered from a large ventral hernia which was repaired at the time of resection of the bladder. She had a recurrence of both the ulcer and the hernia about six months after operation. Twelve months later, chiefly because of the incapacity resulting from breaking down of the hernia, she was again operated upon, the recurrence in the bladder resected and the hernia repaired. Following the last operation she was entirely comfortable for six months when she began to have a return of the bladder pains. Examination showed a hyperemia of the region of the bladder previously operated upon. There was no ulceration to be made out. The hernia did not recur. Since that time she has been given instillations of silver nitrate and neosilvol and has remained quite comfortable. At no time since the first operation have the symptoms of the bladder been so marked as for a number of years before this operation. The second patient operated upon died of pneumonia two and a half years after operation without recurrence of symptoms.

In the third operative case the bladder was resected nine months ago. She had, in addition to two large ulcers, very dense strictures of both ureters. Her bladder capacity was less than two ounces at the time of operation, and frequency of urination was so marked as completely to incapacitate her for any work or social activity. She also suffered from cervicitis and very badly infected tonsils. Her tonsils were removed, the cervix treated by local applications and irrigations, and a very wide resection of the bladder wall was done, removing a part of the posterior wall of the bladder and about half of each lateral wall. After the operation the bladder capacity was very small, the bladder holding only two ounces with the patient under an anesthetic. Immediately following the operation she was entirely free of any pelvic pain. During her stay in the hospital of about eight weeks, her bladder capacity increased to four ounces. Her urine continued to contain considerable pus and she had some burning when she voided. Examination at this time showed general congestion of the entire bladder mucosa. With

the hope of clearing up the infection, which also involved the kidneys, she was given 5 mg. of mercurochrome per kilogram of body weight intravenously. She was sent home with instructions to take ten globules of hexylresorcinol daily. Two months later when she returned for examination her urine contained only an occasional leukocyte. She still had to get up from two to three times at night to void, but her bladder capacity had increased to six ounces without discomfort. Efforts to pass No. 6 catheters up the ureters were unsuccessful because of the strictures. The bladder mucosa was slightly hyperemic but very much improved. There was no evidence of an ulcer. At the present time she is quite comfortable with the exception of backache, her bladder giving her very little concern. There is still some frequency but no pain. If she can be induced to return for complete dilatation of the ureters she will probably be entirely well.

The fourth operative case had suffered four years. For a period of eighteen months she was under treatment by another urologist who had given her three fulgurations, in July, 1923; April, 1924; and February, 1925. Following each fulguration she was much more comfortable for from two to three months, when the pain reappeared. When she consulted us, she was voiding every thirty minutes, and required morphine several times a day for a measure of relief. Because of the history of repeated fulgurations without lasting benefit, and because of the fairly satisfactory results in other cases, we advised resection. The ulcerated area of the bladder, consisting of the apex, was resected on December 14, 1925. The specimen was four centimeters in diameter, and contained a deep excavating ulcer two centimeters long and one centimeter wide. The mucous membrane surrounding the ulcer was hyperemic for a distance of one centimeter. She remained in the hospital six weeks. At the time of her discharge she was quite comfortable with the exception of some soreness in the region of her bladder, and voiding from three to four times at night and every two hours during the day. Her bladder capacity without marked discomfort was four ounces. She was sent home and her doctor requested to give her irrigations of silver nitrate, beginning with one to ten thousand solution and gradually increasing the strength to one to one thousand, these irrigations to be kept up for two or three months. After this time she was advised to come back for further observation. When heard from on March 1, 1926, she wrote, "I am so much better since I came home, and I am taking irrigations twice a week but still have right much soreness in the bladder. I can go from two to three hours very comfortably without voiding, and have gained fifteen pounds."

One patient was treated by fulguration, followed by instillations of silver nitrate. Following the fulguration, instillations of ½ of 1 per cent silver nitrate were kept up for four months at intervals of one week. At the end of this time, examination showed her bladder to be entirely normal in appearance, and now, after the expiration of eighteen months, she has had no further recurrence of symptoms. One patient is now free of symptoms four months after the extraction of four badly infected teeth and instillations of silver nitrate extending over a period of eight weeks. One patient, after keeping up the instillations of silver nitrate for four months, has had no further symptoms for six months, during which time she has had no treatment. The remaining three patients are still under treatment consisting of instillations of silver nitrate. Although not well, so long as they keep up their treatment they are able to go about their work and remain quite comfortable.

The method of using instillations of silver nitrate in these cases was adopted after trying almost every possible type of irrigation with very little benefit. Having noticed in reports by Hunner that the application of 10 per cent silver nitrate at intervals of two weeks kept the patients fairly comfortable, we decided to determine if a solution of silver nitrate could be instilled into the bladder of sufficient strength to give benefit and at the same time not be so irritating as to increase the discomfort already present. At first one to five hundred solution of silver nitrate was used. A catheter was introduced and the bladder thoroughly irrigated with plain water. About two ounces of a solution of nitrate of silver was then instilled through the catheter, the catheter clamped off and the solution permitted to remain five minutes. The bladder was then thoroughly irrigated with normal salt solution. Using this technic, we have gradually increased the strength of the solution and have found

that we can begin with ½ of 1 per cent silver nitrate, provided it is put in through a catheter, left in from five to ten minutes, drained off, and then the bladder irrigated with normal salt solution. The strength of the silver nitrate can be gradually increased in some cases up to 1½ per cent. In the majority of cases, not more than 1 per cent can be tolerated. We have found that in most patients, instillations of 1 per cent silver nitrate by the above method from once to twice a week according to the tolerance of the patient will cause a gradual amelioration of the symptoms and an improvement in the appearance of the lesion. In fact, in one of our cases all evidence of the lesion has entirely disappeared after this treatment had been given for a few months. One patient who has been under treatment twelve months, getting instillations at first once a week and now once every two weeks, is able to sleep all night without having to empty her bladder, and her only discomfort is pain when the bladder becomes distended. Cystoscopic examination twelve months after the treatment began shows one of the two original lesions to have disappeared and the other to have decreased in size. Two patients who have had this treatment have been very much improved so far as their symptoms are concerned; but, probably owing to the fact that they have been so irregular in coming for treatment, the lesions have not materially changed. One has been under observation two years and one about three months.

This method of applying silver nitrate will greatly relieve the distressing symptoms of all these patients. It can be administered by a nurse or a trained attendant, and, in some instances, if kept up over a sufficient length of time, may lead to complete and permanent disappearance of the lesion.

Conclusions

1. Experience justifies the belief that foci of infection, such as infected teeth, tonsils, sinuses and possibly cervicitis bear a causative relation to Hunner's ulcer.

2. The bladder lesion is frequently complicated by ureteral strictures and infection of the kidneys which must be eradicated before permanent relief can be obtained.

3. Very gratifying results have been obtained in early cases by instillations of silver nitrate according to the method described.

4. Excision of the ulcer-bearing area of the bladder should be reserved for those cases that have not responded to local medication or to fulguration.

5. In long standing cases of elusive ulcer there is contraction of the bladder wall and urethra, which often causes a persistent frequency after the lesion has been removed and the pain relieved. In these late cases, after either fulguration or resection, dilatations of the urethra and irrigations of the bladder are helpful.

IODINE IN DYSTHYROIDISM.—A REVIEW.*

By WALTER P. ADAMS, M. D., Norfolk, Va.

Since Plummer advocated the use of idoine in exophthalmic goitre in 1922, there has been a tendency to give iodine in all goitre conditions. Newspapers, some lay health magazines, patent medicine advertisements and many other persuasive forces affecting laymen have brought before them the idea that iodine, in any of its forms, is a cure-all for goitre. Many of the large goitre clinics, as well as physicians in all sections of the country, have had cause to complain because of its improper use. It has frequently been given in cases that should have had it only after thorough clinical investigation and during preoperative care, as well as in cases that should not have had it at all.

The peculiar function of the thyroid appears to be the splitting up of any iodine molecules entering the body, and the conversion of this iodine into the specific thyroid product known as thyroxin. Approximately .33 mg. of thyroxin is delivered to the body daily by the thyroid gland, the amount varying with the metabolic activity of the body. There is over forty times this amount stored in various tissues of the normal adult body. There may be other functions of the thyroid of which we know nothing.

The early Greeks treated goitre by the internal administration of the ash of burned seas sponges, not knowing that the substance was rich in iodides. Iodine was first knowingly used in treating goitre in Switzerland in the eighteenth century, but the work was not well controlled. Trousseau made his famous mistake in 1863 when he prescribed iodine in-

*Read before the Norfolk County Medical Society, at Norfolk, Va., June 21, 1926.

stead of digitalis, and later discovered his mistake and also the marked improvement of the patient.

Prophylaxis against goitre was started in some French schools between 1860 and 1870, but occasional reports of resulting hyperthyroidism brought it into disrepute. No reason could be found for its administration.

Baumann in 1895 discovered that iodine is a normal constituent of the thyroid gland and, various hypotheses as to the importance of its presence have been formulated from time to time since then.

It is important to note that some workers consider simple goitre due to infection. Shepherd, reporting on the occurrence of goitre in Canada, concludes that it is a water borne infectious disease, directly comparable to typhoid. McCarrison has also supported a toxic infective hypothesis. This assumes the presence of specific bacteria, probably of the colon type, as delivering a toxic product affecting utilization of iodine by the thyroid gland. However, to most of us, the iodine deficiency hypothesis is more acceptable.

This brings us to the physiologic importance of iodine in the thyroid. A classification is necessary. On the basis of etiology all goitres can probably be divided as endemic and exophthalmic. The endemic goitres may be divided into the diffuse colloid and the adenomatous, and the adenomatous goitres into those with and those without hyperfunction.

It is now accepted generally that a supply of iodine inadequate for thyroid functions will result in hypothyroidism and consequent intensive or continued stimulation. This in turn, acting on a primarily normal thyroid gland, will cause compensatory hyperthyroidism with simple hypertrophy of the gland.

If this cycle of hypothyroidism and resulting excessive stimulation of the gland is repeated often enough, the result is a diffuse colloid goitre. Iodine deficiency has been definitely proven to be the important etiologic factor in this condition. Patients with colloid goitre are greatly benefited by the administration of iodine. This facilitates the production of a normal thyroxin which is necessary to meet the demands of the body. However, iodine has been supplanted in the treatment of colloid goitre by desiccated thyroid gland and by thyroxin itself. Either of these preparations, if given in sufficient quantity to meet the body demands, allows the goitrous thyroid temporarily to become an unnecessary organ and to rest. In the case of glands that have passed through this cycle a number of times, and in which much colloid has been deposited, iodine does not seem to be utilized and the absorption of colloid only occurs after the gland is put at complete rest by the necessary desiccated thyroid or thyroxin.

Knowing the etiology of this condition, it follows that in its prophylaxis the administration of iodine is most important. Water and salt are the main vehicles used for the small prophylactic doses of iodine being given the public by health authorities in sections of the country where goitre is prevalent. The necessary dosage is minute and, if given in tablet form, only a short annual course is required.

It is thought that in most cases adenomatous goitre has its inception in colloid goitre. Thus it has a direct bearing to lack of iodine. It is possible that the formation of adenomatous tissue is a compensatory attempt to readjust the stimulating mechanism of the thyroid to normal. In its early life, adenomatous tissue cannot function. It elaborates and stores colloid probably years before it can elaborate and store thyroxin. It follows, and observation offers corroborative evidence, that very few hyperfunctioning adenomatous thyroids appear in patients younger than thirty. However, once adenomatous thyroid tissue has started to hyperfunction, it does so erratically, and without relation to the demands of the organism. It is thought that the symptoms that follow are due to an excess of normal thyroxin in the tissues of the body.

The treatment of these adenomatous goitres is not with iodine. It is essentially surgical, whether the goitre is of the hyperfunctioning type or not. Iodine is considered particularly dangerous because of the apparent close relation of the beginning of hyperfunction and the administration of iodine in many cases. This occurs particularly in those having had the adenoma any length of time. For this reason, we may consider iodine definitely contraindicated, after the age of twenty-one, in the presence of an adenomatous goitre. Yet there are many with this condition who will continue to have iodine given them on advice from various sources, and in some cases from physi-

cians. It should be stressed that after twenty-one years of age, iodine is of no avail in treating goitre except of the exophthalmic type, and that with increasing age it is employed with added risk.

It is known that fetal adenomata result from iodine deficiency, so its treatment in iodine-poor sections is obvious.

Exophthalmic goitre has no known cause, although a definite etiologic and histologic sequence can be thought of as taking place. It has been mentioned that continued stimulation of the gland from hypothyroidism will cause hyperthyroidism or over-function. In this condition there is no compensatory formation of adenomatous tissue as in adenoma. According to Plummer, the action is an over-stimulation of the gland causing the production of an incomplete secretion rather than the excessive production of thyroxin. If this is true, then iodine probably acts by completely iodizing the incompletely formed molecule of thyroxin. The gland is consequently put at rest by allowing it to complete the formation of its normal secretion.

In working towards proof of this hypothesis, thyroid glands removed after the use of iodine were microscopically examined and it was seen that large amounts of colloid had replaced the areas of hyperplasia, and that the glands had a tendency to resume an appearance toward that of normal. If the appearance of the gland became more normal, why in time would it not undergo a complete transitory change, and resume its normal function as a result of the medical treatment with iodine without surgery? Clinically it was found that this did not occur because after some time a tolerance to iodine developed. Its efficacy is diminished and a low grade hyperthyroidism continues. These patients are liable to have a flare-up at any time after this tolerance has been established.

From this we see that iodine cannot be used as a cure for exophthalmic goitre. Surgery must be called upon. It is dangerous to neglect surgical treatment after iodine therapy has been started, although many patients have improved so much as to almost refuse operation.

We all know that iodine therapy in the form of Lugol's solution has revolutionized the treatment of this type of goitre and has rapidly reduced its mortality rate. By means of Lugol's solution we are able to abort or prevent the crisis. Very toxic patients receive massive doses. Most striking is said to be the effect on gastro-intestinal crises in which the mortality rate was quite high. Within forty-eight hours the thyroid gland is put at rest and the patient is quiet and composed. Since its introduction, the dosage of Lugol's solution for this condition has been steadily increased and the pre-operative period of preparation reduced. Primary thyroidectomy is now more often possible and there has been a decrease in the number of multiple operations. After operation, large doses of iodine in decreasing amounts are given these patients for some time.

In summarizing, we can definitely say that iodine causes a remission of the toxic symptoms in exophthalmic goitre.

Various routines for administration before and after operation have been worked out by different clinics. However, strict adherence to a constant dosage is not advisable as the individual factor of progress of the disease is enormous. The general belief now is that the present dosage is too large, and a smaller dose adjusted to the individual suggests itself. There is undoubtedly much work being done at present as regards dosage, based on excretion, storage in the gland, and clinical improvement. It is important that a patient with this diagnosis be sent to the surgeon who is to operate, without having had Lugol's. This is in order that the surgeon may see the benefit of its use and thus determine the type of operation best suited to the individual.

Since Lugol's has been used in some clinics, there has been a higher percentage of myxoedema following subtotal thyroidectomy. This is because the type of tissue remaining in patients who have had iodine is much less active than that left in patients who have not had it.

A most important point is the recent appearance of numbers of cases having symptoms which may be grouped under the syndrome iodine-Basedow. Jackson uses the name iodine hyperthyroidism, and in a recent rpeort of thirty-eight cases, states that the condition is becoming increasingly prevalent. The many kinds and preparations of iodine on the market have been held responsible for this de-

velopment. It should be stressed that the promiscuous use of iodine results not only in diagnostic confusion, but is at times distinctly dangerous. The majority of patients affected with iodine hyperthyroidism are over thirty because the development of symptoms only occurs in those previously having an adenomatous goitre.

The syndrome can be distinguished from toxic adenoma and from exophthalmic goitre. Thyroidectomy is usually necessary to relieve these patients. The prognosis is good in early cases, since little permanent damage has been done the vital organs. In late cases the damage is usually serious and fatalities have occurred.

The explanation of excessive iodine on adenomatous tissue is not clear. Crotti believes the changes to be similar to any other form of toxic or bacterial thyroiditis. If so, hyperemia, cellular hypertrophy, and hyperplasia take place and the rich iodine colloid undergoes liquefaction and is quickly absorbed, producing excess thyroxin. Others state that the iodine metabolism of the gland is disorganized. They consider the thyroid unable to metabolize the iodine which is in the circulation, either in excessive amounts or as an incomplete toxic product. In either case, the result is a thyrotoxicosis. The important point is that iodine will bring about a thyrotoxicosis in adenomatous thyroids, and therefore should be used only after careful clinical study of all patients.

References.

Iodine in Treatment of Goitre. Plummer. Medical Clinics of North America, January, 1925.

Function of the Thyroid Gland. Plummer. Coll. Papers Mayo Clinic, 1917-1925.

The Use of Iodine in Goitre. Lahey. *Boston Med. & Surg Journal, Sept.*, 1925.

Iodine in the Treatment of Hyperthyroidism. Thomas & Rienhoff. *Southern Medical Journal*, Feb., 1926.

Pathology of Exophthalmic Goitre. Cattell. *Boston Medical & Surgical Journal*, May, 1925.

Iodine Hyperthyroidism. Jackson. *American Journal Med. & Surg.*, 1925.

PRACTICAL POINTS IN OBSTETRICS.*

By W. H. RIBBLE, M. D., Wytheville, Va.

The object of this paper is not to contribute anything new to the already voluminous literature on obstetrics, but to look back over the general principles of reproduction and the agencies at work in Nature's unerring provision for generation and parturition, so we may not forget that normal labor will terminate successfully without our assistance, and, at times, more successfully than with our interference.

There is nothing in Nature which is performed with more certainty or provided for in a more wonderful and unerring manner than the propagation of life.

Watch the weeds come up in the well cultivated garden after each rain; watch the tadpole come from the egg in the edge of a pond, then develop legs, lose his tail, and crawl out on dry land—a frog; see the wiggle-tail come to the surface of the water, burst its shell and fly off—a mosquito.

Birds, at the proper season, will mate and, by the time the fertile eggs are ready to be laid, a nest has been built to receive them and the prospective mother devotes her time to keeping them warm till the birdies come forth. She then feeds and protects her young, and keeps their nest clean till they are ready to fly away.

Thus, we might watch life—from the micrococcus to the rhinoceros—and we will see that the vital energies of all living things are mainly expended in feeding themselves and breeding their kind, till we come to *man*. He is endowed with a mind, much stronger but, sad to relate, not as unerring as the instinct of his inferiors. With him, the harmonious and unerring laws of Nature are made to detour and are jostled over the by-paths of self-indulgence, ambition, false pride and disregard for his duty to his and the next generation. He feeds better and breeds less.

When the young man and the young woman arrive at the age when Nature has fitted them for propagation, they feel an affinity for one-another. Some of the unsophisticated wed young, build up a normal home and raise a family of children. But few women marry during the first years of womanhood. Their unfulfilled mission leads them to the dance, the petting party and many other diversions from which they get a thrill. (One young woman, who committed suicide, left a note saying she did it to get a new thrill).

When they finally decide to marry, it is often with some other motive than to raise a family. In fact, their greatest concern is how to prevent the natural consequence of the union and, if it occurs, how to defeat its object. Such

*Read before the Southwestern Virginia Mediral Society, at Roanoke, Va., March 30-31, 1926.

unions are contrary to Nature, the parties thereto often drifting farther and farther apart, till many of them meet in the divorce court, instead of over the cradle of their offspring. A recent magazine contained an article on the subject of women who married for the purpose of getting a divorce, with alimony, and stated that some were found who are getting it from two and three different men.

These deranging influences reverse the gears of Nature. The ganglia, whose function it is to harmonize and govern the nutrition and functions of the generative organs, are thrown into confusion. This is a probable explanation of the "infantile" uterus, undeveloped mammae, the irregularities and pain of menstruation, the various nervous disorders and the exaggerated pain of parturition—which conditions are not seen in the lower animals, which have no minds to interfere with the normal course of events.

Let us now form a mental picture of the female pelvic cavity and its contents. Here we find the bladder, uterus, rectum and vagina —all active organs, which, in performing their functions, must dilate and contract extensively. Hence, the connective tissue, between and around them, is a loose cellular connective tissue, with "trabeculae dividing and reuniting —leaving between them spaces, so that the tissue assumes the character of a loose plexus" (Klein), which holds the organs in place loosely and admits freedom of motion.

All active organs require active blood and lymph supply, so we find the vaginal, uterine, vesical and rectal arteries are large and anastomose freely with one another through the loose connective tissue.

The veins, of course, are proportionately large and numerous and the vaginal veins form two complete vascular sheaths around the vagina, making it an erectile tissue.

Lymph sinuses and lymph clefts and plexuses, in and around these organs, are exceedingly plentiful and, in permeating the loose connective tissue, add elasticity and pliability.

Mucous and other secretory glands line the cervix, vagina and labiae to lubricate them, when such is needed.

Nerve filaments from the sympathetic and sensory systems pass through co-ordinating gangliae and are distributed to all these things, so that, when the day of delivery comes, a message is sent to every organ and function, to prepare for the coming event. There is an afflux of blood to the parts, stimulating the functions of every participant. This hyperemia, pressing on the sensory nerves, causes an aching of the back; passing on to the uterus, it stimulates its muscular fibers to contract. The lymph spaces are filled with lymph and the veins are distended, rendering the parturient track puffy and dilatable.

The glands throw out a profuse viscid secretion to lubricate the track and to entangle any bacteria which might produce infection. The gush of the amniotic fluid gives the canal an aseptic douche and the advancing body of the child wipes the canal clean. This, probably, is an explanation of why we do not more frequently meet with post-partum inflammation in cases with known infection. Another explanation might be that the great vascular and lymph supply of the parts gives them the power to resist the action of much infectious material.

The more we study this picture and the mechanism of labor, the more we will be convinced that a normally developed woman—under normal conditions—will bring forth her child without assistance. Then, it would appear, our main duty is to bring about a normal condition. We should impress upon the woman's mind, when she comes to us, all worked up because she is pregnant, that she has nothing to fear,—that the thing which has happened is the thing which she was built for, and that, without it, her life fould never be complete. We should warn her against being impressed by the kind lady who will tell her of maternal impressions and many awful things to which she may look forward; and thus we may direct her mental as well as physical welfare through her period of gestation, that we may bring her to and through a normal delivery. And *we* should keep fresh in our minds, in this day of rush and hurry, what has to take place in the different stages of labor,—that the child's head must be moulded as it passes through a tortuous, bony canal and dilates the tissues as it passes, and that, if its speed exceeds the yielding powers of the tissues, rupture is bound to result.—*rupture*, which is the cause of more trouble, to the child-bearing woman than anything else with which she has to contend.

THE SURGICAL INDICATIONS OF INFLAMMATORY DISEASES OF THE GALL-BLADDER.

By AIME PAUL HEINECK, M. D., Chicago, Ill.
Surgeon to the Frances Willard, St. Paul, Lakeside and Washington Park Hospitals.

The morbidity and mortality of the surgical diseases of the gall-bladder and biliary ducts can be lessened by the timely and judicious employment of appropriate operative measures. Guided by our clinical experience and a study of the English, French and German literature of the subject published during the last five years, it is my wish to briefly discuss the indications for and the usefulness of operative treatment of inflammations of this organ. The rapid, permanent and complete cure of inflammatory diseases of the gall-bladder and biliary passages can only be secured by the aid of surgery. Medical treatment is palliative and valuable in the pre- and post-operative management of these affections. To furnish the occasional operator with safe indications for the performance of either of these two operations, cholecystostomy and cholecystectomy, is the sole object of this paper. Formerly, there was a tendency to extreme conservatism; surgeons were hesitant and only badly diseased gall-bladders were removed. Nowadays the reverse obtains and, of the two operations, cholecystectomy is the more popular, the more frequently performed, and is said to be more often followed by complete and permanent recovery and to do, when skilfully performed, the most good to the greatest number.

In inflammations of the gall-bladder, calculous or non-calculous, complicated or uncomplicated by disease of the neighboring organs, cholecystostomy and cholecystectomy have each their respective sphere of usefulness. No surgeon of experience employs either exclusively. Irrespective of the type of operation performed, a certain percentage of cases present post-operative symptoms. Some clinicians teach that a diseased gall-bladder is a potential menace and should not be left in the abdominal cavity any more than a diseased appendix; others maintain that the gall-bladder should be left whenever possible, claiming that its ablation is a mutilation and that it is a safe and sure guide to the common duct should a subsequent operation on the bile tracts be necessary. After removal of the gall-bladder, exploration of the bile-ducts is attended with great difficulties.

Drainage of the gall-bladder is a safer and easier procedure in the hands of the average surgeon and in the average case. It is easy of execution, requires little operative skill and, in desperate cases, is an emergency operation giving immediate relief and is frequently life-saving. Many patients are so improved by an emergency or preliminary cholecystostomy that they, when their condition is stabilized, willingly and safely submit to further restorative operating or to the removal of their diseased gall-bladder. In fulminating cases, carry the acute gall-bladder by drainage to the subacute or chronic stage and remove it later if it becomes neccesary.

Cholecystectomy removes completely from the body a focus of infection and is usually attended by an earlier, more complete and permanent disappearance of symptoms. The advocates of cholecystectomy say that its end-results are as superior to cholecystostomy as those of nephrectomy for pus-riddled kidneys are better than those of nephrotomy. They further maintain that cholecystostomy is an incomplete operation because the retained gall-bladder is a potential source of future trouble and is an important factor in stone production and in the persistence and recurrence of symptoms. The secreting glands and crypts in the lining membrane of the gall-bladder may be retention pockets of sediment, pus and bacteria.

An intelligent and profitable discussion of the subject calls for a knowledge of the important accepted and established facts known concerning the anatomy and physiology of the gall-bladder and a brief review of the etiology and pathology of its inflammatory diseases.

The gall-bladder is not a useless, not a vestigial organ. Its routine removal is to be condemned. When diseased, if its restoration to approximately normal function and normal structure be probable, it should not be removed. If the gall-bladder is irreparably diseased, its removal is necessary. Formation anew of the gall-bladder never takes place.

The relations (anatomical and physiological) existing between the gall-bladder and bile-ducts and the contiguous organs (first part of the duodenum, pyloric end of the stomach, liver, head of the pancreas, etc.) are intimate

and important. Functional impairment and anatomical deviations of any or of all the constituent parts of the biliary system, determine more or less biliary insufficiency and digestive disturbances. These lower vitality, entail invalidism and predispose to, when they do not result from, calculous, inflammatory, neoplastic and other degenerative processes in the gall-bladder and related organs.

Anatomical and physiological integrity of the gall-bladder and bile-ducts (excretory and secretory parts of the hepatic system) is essential to the perfect physical state of the individual. Normal hepatic function presupposes, among other conditions, adequacy of the lumen of the cystic, hepatic and common ducts and normalcy of the mucous membrane and musculature of the gall-bladder. The organ must be free from adhesions and its motility and contractility unimpaired.

About the gall-bladder, extending beneath the serosa and especially between the liver and gall-bladder, there is a layer of cellular tissue in which are situated lymphatic capillaries communicating with the lymphatics of the liver. In severe infections of the gall-bladder, this cellular tissue is infiltrated and oedematous. It is continuous with that covering the pancreas.

Connective tissue holds the gall-bladder in intimate contact with the under-surface of the right lobe of the liver. The organ is further maintained in position by peritoneum covering fundus and under and lateral surfaces and continuous with the hepatic serosa.

The gall-bladder and bile-ducts are abundantly supplied with lymphatic vessels by which infection may be conveyed to and from the liver, to the head of the pancreas and to other neighboring or remote organs. Many of these lymphatics pass through a lymphatic gland situated at or near the neck of the gall-bladder. Some of the efferent lymphatic vessels empty in glands near the head of the pancreas, others in glands near the hepatic artery.

The cystic duct at its junction with the gall-bladder forms a sharp letter S-kink. In certain pathological states, so efficient is the valve-like obstruction formed by this kink that either the gall-bladder or the common duct can be overdistended to bursting without affecting the pressure in the other. The mucous membrane of the cystic duct is continuous with that of the gall-bladder; it differs from it by being thrown into numerous valve-like folds (leaflets), the valves of Heister.

Anomalies in the caliber, number, length, mode of union, distribution and anatomical relations of the regional blood-vessels and bile-ducts are not uncommon. To disregard them is to invite operative accidents.

As to the normal functional value and functions of this organ, there is a great difference of opinion. The bile undergoes in the gall-bladder modifications, physical and chemical, enabling it to better participate in the digestive processes. Normally the gall-bladder contains about 30 c.c. of bile; by virtue of the elasticity of its walls, it is capable of enlarging to a much greater capacity. It is an overflow chamber, a tension bulb, a safety-valve, as it were, protecting the liver cells from injury incident to excessive back pressure. Some clinicians claim that the most important function of this organ is to relieve pressure within the biliary ductal system.

The flow of bile into the duodenum is regulated by many factors. The rhythmic contractions of the gall-bladder, the respiratory movements, the milk action of the duodenal peristaltic waves, the passage of the acid chyme through the pyloric opening, and active digestion. The gall-bladder and ducts are squeezed between the liver and the intestines by the contractions of the diaphragm and of the abdominal respiratory muscles.

Under normal fasting conditions, the sphincter of Oddi, when normal in tone, controls the bile pressure in the ducts. With the passage of food from the stomach into the duodenum, the sphincter at the outlet of the common bile-duct relaxes, the gall-bladder contracts and the bile escapes into the intestine. As the sphincter of Oddi contracts, the gall-bladder relaxes reflexly and vice-versa (theory of contrary innervation).

The intra-duct bile pressure is dependent on the force of bile secretion and the resistance offered by the sphincter muscles at the ampulla of Vater. The liver secretes bile at about 300 mm. pressure of water and the maximal contracting force of the gall-bladder, when under stimulation by electricity, is only 313 mm. Thus, it is seen that the maximal force of contraction exerted by the gall-bladder on its contents does not exceed materially

the maximal normal intra-hepatic bile pressure.

The gall-bladder, owing to the poor development of its musculature, has low contractile or expulsive power; it cannot fully empty itself. Its smooth musculature has just enough tonus to prevent overdistention of the organ and cannot and does not exert any particular pulsative pressure upon its contents. Hypertrophy of the gall-bladder wall is not caused by and does not follow obstruction (continuous or intermittent, partial or complete) of the cystic or common duct. This is in sharp contrast to what occurs under analogous conditions in other smooth-muscled hollow viscera.

During fasting, the gall-bladder fills with bile, adds mucus to it, concentrates it, and otherwise modifies it. Gall-bladder bile is a thick, syrupy, viscid fluid having about eight times the consistency of common-duct bile. This concentration of bile is brought about largely through water abstraction by the lymphatic vessels.

The gall-bladder secretes mucus. "The mucus it produces reduces the chances of pancreatic and other complications"—Mayo. The bile from the hepatic duct being free of mucus can cause a more virulent pancreatitis than gall-bladder bile which, under normal conditions, always contains mucus.

Permanent dilatation of the bile-ducts and larger biliary radicles follows, as a rule, the permanent loss of gall-bladder function through atrophy, disease, such as long-continued chronic cholecystitis, distention of the gall-bladder with calculi, complete occlusion of cystic duct, etc., or removal of the gall-bladder. Animal experimentation, operative, post-operative and post-mortem findings have repeatedly confirmed the preceding statement. This dilatation is expressive of nature's effort to compensate for the loss of the gall-bladder. The stump of the cystic duct participates in this distention. That this permanent dilatation of the biliary ducts is of permanent harm to the individual has not been demonstrated. As a matter of fact, it presents no characteristic symptom-complex.

Though in some of the lower animals the gall-bladder is absent, though in man it is not a vital organ as evidenced by the many patients in whom its removal has not been followed by any serious disturbances, we are firmly convinced that it is an important organ and a factor in the well-being of the individual. The body, by its power of adaptation, compensates for the loss of the gall-bladder. If the bile-ducts are patent, if the flow of bile into the duodenum is free and unimpeded, cholecystectomy does not permanently impair health, does not interfere with nutrition, does not shorten life, but it has been noticed that in 60 to 70 per cent of cases in whom the gall-bladder has been removed, there is either a diminution or a suppression of the gastric secretion of HCl. In many of these cases, the HCl deficiency antedates the operation. I have patients whom I cholecystectomized over ten years ago and who have since been in normal health.

After removal of the gall-bladder, the biliary pressure equalizes or overcomes the resistance of the sphincter of Oddi. Bile secretion is more or less continuous and after a cholecystectomy its excretion into the duodenum is at first also more or less continuous and pure bile may appear in the stools (this is abnormal).

Next to the appendix vermiformis, the gall-bladder is the most frequent seat of abdominal morbidity. The intimate anatomical contacts and the close interrelationships (nervous, vascular, lymphatic) existing between the gall-bladder and biliary ducts and the contiguous abdominal organs determine in a large measure the incidence, progress and distribution of disease in this region, be the disease calculous, obstructive, inflammatory or neoplastic in nature.

Inflammatory processes (especially those of low virulence) of the gall-bladder may initiate and, in fact, are frequently associated with gall-stone formation. Cholelithiasis is most always preceded by or associated with an infective inflammation of the gall-bladder. Bacteria (staphylococci, streptococci, typhoid, paratyphoid, colon bacilli, etc.) have been found in biliary calculi, and have been found etiologically associated with cholecystitis. An infected gall-bladder is capable of receiving infection from and distributing infection to contiguous and remote organs. Chronic septic infection from the gall-bladder may cause infective arthritis, fibrositis (muscular rheumatism), to say nothing of the more remote but nevertheless important noxious effects upon the heart and blood-vessels. The gall-

bladder may be reinfected: it may reinfect itself. Thus is explained, in many cases, the recurrence and persistence of symptoms.

Infective microorganisms migrate to the gall-bladder through the common and cystic ducts, through lymphatic vessels or through the blood stream (hepatic artery, cystic artery, portal system). Inflammation may spread to the gall-bladder by continuity of tissue—enteritis, duodenitis, choledochitis, cholecystitis: may spread to it by contiguity of tissue. Microbes gathered from the intestines by the portal system filter through the liver and may be carried in the bile to the gall-bladder via the hepatic and cystic ducts. Infection gaining entrance from the intestines into the portal circulation may reach the gall-bladder by means of the numerous lymphatic vessels that pass from the liver to the gall-bladder; may ascend from the duodenum through lymphatics in the walls of the common duct. Thus is explained the frequent coexistence of cholecystitis with appendicitis, with typhoid fever, with colitis and with suppurative hemorrhoids.

Enlargement of the lymph nodes along the common duct is good evidence of gall-bladder infection. "A seriously infected gall-bladder can not exist without evidence of infection in the glands which drain it." (W. J. Mayo).

The frequent coexistence and association of cholecystitis and choledochitis with an hepatitis most marked in the immediate neighborhood of the gall-bladder, with acute and chronic pancreatitis, is most always due to infection propagated by the lymphatic vessels. Many cases of pancreatitis follow cholelithiasis and cholecystitis. Cholecystitis may also be due to a direct extension of inflammation by way of the lymphatics from a liver already inflamed (Ewarts Graham). The not uncommon simultaneous occurrence of duodenal ulcers and cholecystitis furnishes further proof of lymphatic-borne infection. Some clinicians claim that 10 per cent of duodenal ulcers are accompanied by cholecystitis. Pyaemia excepted, every infection is a lymphangitis.

Bile stasis is a potential predisposing factor to gall-bladder disease and to gall-stone formation. Stagnant, stringy, viscid, tarry bile is evidence of pathology. Stasis is a factor in appendicitis, in inflammations of the urinary bladder, and apparently plays an analogous etiological role in inflammations of the gall-bladder. Stasis is more common in women because of pregnancy, tight clothing, constipation, sedentary life, lack of fresh air and exercise. Impairment of the elasticity, contractility or motility of the gall-bladder, partial or complete occlusion or obstruction of the bile-ducts impede the free flow of bile, predispose to bile-stagnation, to bile-concentration, to bile disintegration, increase the bile pressure and invite bacterial infection. Even those who attribute gall-stone formation to hypercholesterinaemia do not deny the etiological importance of stasis and infection.

Acute, subacute, chronic or recurrent inflammatory processes of the gall-bladder and bile-ducts are either local or diffuse. Gall-bladder disease is often merely part of an infection involving other organs in close proximity. Here, as elsewhere, infective inflammation (primary and secondary) spreads by continuity or contiguity of tissue, is transmitted through vascular or lymphatic channels and, gall-stone formation being excepted, resembles in inception, evolution, termination and sequelae infective inflammations occurring in other hollow viscera. The various pictures presented correspond to the different phases, to the different stages of inflammation. Each succeeding attack of cholecystitis causes additional degenerative changes in the already structurally altered gall-bladder. Grossly pathological gall-bladders are usually found in later life. Autopsy records, operative findings and clinical observations furnish abundant evidence of the very slow progression of most lesions of the biliary tract.

Gall-stones frequently accompany inflammatory (infective) processes of the gall-bladder and bile-ducts, are usually secondary to them, act like infected foreign bodies and play an important etiological role in the lodgment, persistence and transference of infection. "Gall-stones are found in approximately 70 per cent of all cases of gall-bladder disease" (Mayo). Though a by-product, they often initiate and more frequently keep up, complicate and aggravate gall-bladder disease. By their mechanical presence, they can cause tissue necrosis and perforation. Gall-stones vary in origin, shape, size, number, chemical composition and location. They may lodge and remain latent in the gall-bladder, may migrate down the cysticus and the common duct and then escape into the intestinal canal or may

become impacted in a diverticulum, in the neck of the gall-bladder or in any part of either the cystic or common duct. Impaction occurring after or unrelieved by a cholecystostomy produces a permanent mucus fistula. The persistence of an external mucus fistula may also be due to a stenosed or strictured cystic duct. A strictured or injured common duct may cause the persistence of an external biliary fistula. Calculous occlusion of the common duct causes temporary or permanent obstructive jaundice of gradual or sudden onset, leading, in some cases, to biliary cirrhosis. Stones in the hepatic ducts and in the liver are of unusual occurrence. Calculi lodging in the bile-ducts may cause, after a time, at point of arrest, pressure ulceration, scarring, cicatricial contraction and stricture. If the calculus or calculi lodge or become impacted in the cystic duct, there may ensue an intermittent or continuous hydrops or mucocele of the gall-bladder, or an acute or chronic empyema. In the absence of impacted calculi, hydrops fellae and empyema are due to inflammatory sequelae causing a complete stricture, compression, closure or occlusion of the cystic duct. Complete obstruction of the cystic duct results in distention of the gall-bladder by clear mucus without bile. The cystic duct may be obstructed by the direct mechanical pressure of an enlarged lymphatic gland.

Infections of the gall-bladder involve, simultaneously or successively, one, two or more of its coats. Usually they are mural, interstitial, deep-seated and, when virulent or long-continued, invariably produce permanent histological changes. The integrity of the mucous membrane, submucosa and muscularis may be seriously impaired. Pericholecystitis, more or less extensive, is frequent. Any inflammation of the gall-bladder may be complicated by a localized or diffuse peritonitis. In chronic cholecystitis, the gall-bladder is thickened, sclerosed, shrunken and embedded in adhesions; in rare cases, it is the seat of calcareous degeneration. Long-standing calculous occlusion of the common duct leads to a contracted gall-bladder in about 85 per cent of the cases (Courvoisier's law).

Inflammation proceeding to the stage of suppuration results either in an empyema, acute or chronic, a phlegmonous inflammation of the gall-bladder wall or a pericholecystic abscess. If an infected gall-bladder ruptures into the hepatic substance, a liver abscess results. Ulcerative inflammation, like gangrenous inflammation, is local or general and involves the gall-bladder wall in part or in its entirety. If ulceration or gangrene extend through the whole thickness of the gall-bladder wall, perforation, acute or chronic, occurs either into the free peritoneal cavity or, protective adhesions being present, into a neighboring hollow viscus. In the former case a diffuse peritonitis results; in the later, an internal biliary fistula ensues. "Perforation of the gall-bladder into the transverse colon or duodenum is not infrequent" (W. J. Mayo).

Pericholecystic adhesions are usually due to gall-bladder disease. They may bind the gall-bladder to the omentum, pylorus, duodenum, transverse colon, anterior abdominal wall, etc.; they may kink, twist, obstruct or compress the pylorus, the cystic or the common duct and when they impede the evacuation of the stomach and the easy filling and emptying of the gall-bladder, there results pain, digestive and other disturbances.

Inflammations of the bile-ducts that heal by scar formation lead to stenoses, to strictures. Cicatricial changes in the gall-bladder produce distention, deformity, sacculation, hour-glass contraction, fibrosis or atrophy of the organ.

The physiologic and pathologic relationships existing between the stomach, duodenum, head of pancreas, liver and the gall-bladder and bile-ducts influence, obscure the symptomatology of disease of this region and contribute to the uncertainties of early diagnosis. The clinician, despite the aid of a carefully elicited history and a judicious analysis of symptoms, is often unable to determine accurately previous to a laparotomy the extent and duration of gall-bladder involvement. As the clinical manifestations frequently do not correspond to the morbid anatomy present, and as many of the symptoms from which these patients suffer are reflex in origin, an exact diagnosis is often impossible previous to exposure of the seat of disease to inspection and palpation. Gall-bladder disease does not present a uniform clinical picture. The symptoms or signs are those of infection, inflammation, obstruction (calculous or non-calculous) and dysfunction, such as digestive disturbances, biliary dyspepsia, nausea, vomiting, belching, etc.—"Fair, fat and forty with belching" (Deaver).

Adhesions resulting from acute or chronic pericholecystitis, pre- or post-operative in origin, may cause great distress, may impair the functional integrity and motility of the gall-bladder and surrounding organs; if omental, the pull on the greater curvature may be such as to render gastric peristalsis painful. Infective inflammation causes continuous, intermittent or paroxysmal pain which may be localized (biliary ache, dull pain in right hypochondrium) or radiating (biliary colic). Chills, fever, sweats, prostration, localized tenderness and rigidity over the gall-bladder region are always present in the acute stage. The different stages of inflammation—catarrhal, suppurative, ulcerative, gangrenous, fibrotic—are accompanied by their respective symptoms. Obstruction to the biliary flow causes jaundice, cholemia with its accompanying disturbances, pruritus, etc. Some of the symptoms of chronic gall-bladder disease are due to adhesions; many result from coincident or associated disease of the duodenum, liver, pancreas, etc.; others are caused by the diseased gall-bladder.

To arrive at well-founded conclusions, it is important: (a) To take a careful history and to make a complete physical examination. Keep in mind that gall-stones and gall-stone colic are not essential to the clinical picture of gall-bladder disease. Gall-stone formation is merely a frequent incident of gall-bladder infection. (b) To consider the roentgenological evidence. An affirmative roentgenological diagnosis is highly reliable. X-rays are able to visualize about 50 per cent of cases of cholelithiasis. Fluoroscopic and X-ray observation of the stomach and intestines prove serviceable by revealing the existence of adhesions and other unsuspected abnormalities. (c) To interpret intelligently and skilfully the physical signs elicited and the evidence furnished by cholecystography. The oral and intravenous method of dye-injection are both valuable. (d) To analyze the laboratory findings,—urine, blood, stomach contents, etc. They may furnish corroborative data. Non-surgical drainage of the bile tracts is a diagnostic procedure which has not yet come into general use. Its value is disputed by some.

Cholecystostomy and cholecystectomy have each their advocates and respective indications. The operator should adopt the type of operation best suited to the case at hand. He must individualize. The indications are to shorten the patient's convalescence, to hasten his return to health and to correct the existing pathology either by drainage or by more or less complete removal of foci of infection. Cases associated with much gross pathology tax the ingenuity of the surgeon. The degree of recovery secured is in direct proportion to the extent of pathology corrected.

The success or failure of an operation depends upon the degree of relief obtained, the results secured and the absence of unpleasant post-operative sequelae. It is only after the abdomen has been opened and the anatomical changes present have been ascertained that the surgeon, best judge of his patient's resistance, can intelligently select the appropriate operative procedure.

Ideal surgery calls for the conservation of organs. There should be no needless mutilation. We disapprove of the prophylactic removal of the gall-bladder,—the removal of an organ for conditions that may not occur. Cholecystectomy involving the sacrifice of an important organ is usually an operation not of election but of necessity. The small mimic gall-bladder, formed at times after removal of the real viscus, is not a regenerated gall-bladder but merely a distention of the stump of the former gall-bladder. It cannot perform the function of the parent organ. We believe that slight degrees of cholecystitis can resolve and the parts be restored to normal.

Surgical treatment should be instituted at the onset or in the early stages of gall-bladder disease, before the advent of such preventable complications as common duct obstruction (calculous or non-calculous), rupture of the gall-bladder into the free peritoneal cavity or into an adjacent viscus, various forms of pancreatitis, etc., before the pathology is so far advanced that restoration of normal function is doubtful. During the early period of disease, the operative difficulties are minimal, the mortality is practically negligible and improvement and cure easier of attainment. In the young, the percentage of recoveries is high; the operative mortality, very low.

When disease of the biliary tract is complicated by surgical disease of other abdominal or pelvic viscera, should the patient's condition not warrant a prolonged operation, the surgeon will do all that is consistent with the patient's

safety and defer further operative work to a more propitious time.

In diseases of the gall-bladder and bile-ducts, cholecystostomy is the operation of election:

1. In the aged, the feeble, the obese and in all patients whose general condition does not permit of more than the least amount of operating; in the presence of advanced cardio-vascular, advanced cardio-renal, advanced hepatic disease; in all cases in which a prolonged operation or an extensive dissection might be productive of severe shock or might cause death; in all critical cases, as an emergency operation, when great debility or other conditions, such as deep jaundice due to stone in the common duct, etc., necessitate haste and make cholecystectomy too dangerous or too prolonged an operation at that time. It is a good surgical principle not to subject patients to more than the minimal amount of trauma consistent with their general condition and the indications present. A very short incision immediately over the gall-bladder and the insertion into it of a drainage tube or gauze constitute almost a minor operation.

2. In cases associated with pregnancy.

3. In cases associated with pancreatic disease.

4. In all other patients in whom the existence of complications or disease of proximal organs make cholecystectomy too hazardous, too risky.

5. In deep jaundice, due to calculous or non-calculous occlusion of the common duct, or to its compression by adhesions, by the head of the pancreas, etc. Decompression of the liver by drainage with the minimal interference is indicated in deep jaundice; owing to the decreased coagulability of the blood there is great danger of fatal post-operative hemorrhage. In these patients the question of hepatic function must be seriously considered.

6. If the gall-bladder be very intimately adherent to the surrounding organs. Adhesions may so firmly glue the gall-bladder to surrounding structures that its removal necessitates the dissection of inflamed tissues and leaves raw surfaces, potential portals of infection. Duodenal and other intestinal fistulae have resulted from the separation of dense adhesions binding the gall-bladder to the gut.

7. In cholelithiasis, for the removal of gall-stones from any or all of the following locations: Gall-bladder, cystic or common duct, provided that the gall-bladder presents a normal appearance or is only slightly diseased and the cystic duct neither ulcerated nor strictured. The chief cause of relapse in gall-stone disease is the leaving behind of undetected stones. In the absence of valid contraindications, all gall-stones call for operative removal. Early removal of biliary sand and gall-stones has been advised as a prophylactic measure against malignancy.

8. In the early stages of cholecystitis, calculous or non-calculous, when the gall-bladder is but slightly altered and cystic duct is patulous, removal of stones and drainage may be followed by return of function and restoration of organ to normal structure. There are mild degrees of cholecystitis that do not produce thickening of the gall-bladder wall.

9. In acute pancreatitis complicating gall-bladder disease. The association of gall-stones and pancreatitis is variously given as between 50 and 65 per cent. Mayo reported that in 80 per cent of operations on the pancreas, there are lesions induced or accompanied by gall-stones.

10. In all cases, traumatic or pathologic, and in which there is imminent danger of post-operative stricture of the common duct, also in those in which a stricture being present, there is no hope of re-establishment of the patency and function of the common duct. In the presence of these conditions, the necessity of anastomosing the gall-bladder to the gut may be immediate or may arise at some future time. After a cholecystectomy, no short-circuiting operation between the gall-bladder and the gut is feasible.

11. In the course of all laparotomies in which you have not encountered infection, and the patient's condition warrants it, examine the gall-bladder. Palpation may reveal the presence of gall-stones. As in these cases the calculi have not caused marked symptoms and the gall-bladder wall usually presents a normal histological structure, cholecystostomy suffices.

12. In certain cases of cholangitis accompanied by icterus and enlargement of the liver and pancreas.

13. In certain cases of malignancy with obstructive jaundice due to carcinoma of the common duct or of the head of the pancreas. In these cases, if radium treatment be thought

desirable, the gall-bladder can be used as an avenue for its application.

14. In all cases where temporary drainage of the gall-bladder and bile-ducts is indicated, —(a) presence of infected foci in the liver; and (b) to secure the expulsion of stones overlooked at time of operation. Drainage permits spontaneous discharge of small intrahepatic concrements as they pass downward to the extra-hepatic ducts.

15. In all cases where the mechanical difficulties incident to a cholecystectomy are great and make the operation extra-hazardous.

Convalescence after a successfully performed cholecystectomy is shorter, attended with less discomfort and less complicated than after cholecystostomy. The post-operative course is as uneventful as that of a salpingectomy for pyosalpinx. Following removal of the gall-bladder, recurrence of symptoms is uncommon and the percentage of cures is high; the danger of pericholecystic adhesions and mucous fistulae-formation is non-existent. One of the most valid objections to cholecystostomy is the frequency with which post-operative adhesions form after its performance. "In the Mayo Clinic, cholecystectomy is performed in more than 90 per cent of cases as against cholecystostomy in less than 10 per cent" (Mayo).

The disadvantages of cholecystectomy are: (a) It is difficult of execution. (b) It is not of universal application. The gall-bladder should never be removed unless one is certain that the common duct is patent. (c) It is attended with the danger of shock, hemorrhage, injuries to the common duct, to the duodenum, etc. (d) It has a slightly higher operative mortality than cholecystostomy. (e) It removes a useful organ, the functions of which we do not definitely know.

Cholecystectomy is the indicated operation if the patient's general condition permits:

1. In all localized or diffuse ultra-acute inflammatory conditions, ulcerative, gangrenous, phlegmonous or membranous cholecystitis. In all cases of cholecystitis in which the gall-bladder is so altered that, judged by gross evidence, "it can not come back."

2. In acute cholecystitis when the gall-bladder is very distended from blockage of the cystic duct.

3. In advanced chronic or repeated inflammations of the gall-bladder. When the organ is markedly thickened, contracted, atrophied, deformed, shrunken or adherent, and when it is evident that it cannot be restored to its normal condition, when it is evident that it is irretrievably lost or that the disease is progressive in nature as in fibrous or calcareous degeneration. In these cases, the elasticity of the gall-bladder wall is impaired or lost and its glandular secreting apparatus partly or wholly destroyed.

4. In a "strawberry" gall-bladder, the gall-bladder mucosa being covered with tiny beads.

5. In hydrops fellae due to blockage of the cystic duct, secondary to stricture or to impacted stone.

6. In empyema of the gall-bladder due to an impacted stone or strictured cystic duct.

7. For the cure of pathologic fistulae existing between the gall-bladder and a hollow viscus, if associated with disturbances calling for treatment.

8. For penetrating injuries, ruptures and perforations of the gall-bladder of either traumatic, calculous or inflammatory origin.

9. For mucous fistulae of the gall-bladder resulting from stricture or other obstruction of the cystic duct.

10. In chronic obstruction of the cystic duct whether due to stone impaction, scar-tissue formation, or torsion of the gall-bladder.

11. In irreparable injuries of the gall-bladder.

12. In volvulus of the gall-bladder.

13. In benign neoplasms of the gall-bladder.

14. In operable malignant neoplasms of the gall-bladder.

References.

1. Brewer: Recurrence of Calculi in Common and Hepatic Ducts after Cholecystectomy. *Arch. Surg.*, 1921, ii, 145-152.
2. Chauffard: Indications operatoires dans les icteres chroniques lithiasiques. *Rev. gen. de clin. et de therap.*, 1919, xxxiii, 433-436.
3. Crile: Some Special Points in the Surgery of the Gall-bladder. *Med. Rec.*, N. Y., 1920, xcvii, 584.
   Certain Problems Connected with the Surgery of the Gall-bladder. *Northwest Medicine*, 1921, xx, 53-56.
   Special Points in Gall-bladder Surgery. *Ann. Surg.*, 1923, lxxviii, 191-193.
4. Darner & Cullen: The End-Results in Nearly Three Hundred Cases in Which the Gall-bladder was Drained—Not Removed. *Surg., Gynec. & Obst.*, 1923, xxxvii, 579-598.
5. Deaver: What Surgery Offers in Gall-bladder Disease. *Nebraska State M. J.*, 1922, vii, 185-190.

Cholecystectomy: External and Internal Cholecystostomy. *Ann. Surg.*, 1925, lxxxi, 2, 761-766.
6. Deaver & Reimann: Cholecystostomy Versus Cholecystectomy. *J. A. M. A.*, 1924, lxxxii 2, pp. 2115-2118.
7. Gosset: Sur les indications de la cholecystectomie. *Bull. et Mem. Soc. de chir. de Paris*, 1922, xlviii 1, 546-559.
8. Graham, Cole and Copher: Cholecystography. *J. A. M. A.*, lxxxiv, 1175.
9. Hartman & Petit-Dutaillis: Les suites eloignees de la cholecystectomie, *J. de Chir.*, 1922, xx, 349-357.
10. Mayo, W. J.: Surgery of Gall-Bladder Disease. *J. A. M. A.*, 1926, lxxxviii, 444.
11. Mayo Clinic, The: Collected Papers. 1920-1924, xii-xvi.
12. Moore: The Associated Pathology of Gall-bladder Disease With a Further Plea for Cholecystectomy. *Surg., Gynec. & Obst.*, 1922, xxxix, 338-341.
A Comparative Study of the End-Results of Cholecystostomy and Cholecystectomy. *Surg., Gynec. & Obst.*, 1921, xxxiii, 41-44.
13. Potter: A Post-Operative Gall-bladder Syndrome—Its Recognition and Cure. *J. Missouri M. A.*, 1925, xxii, 175-177.
14. Rowlands: Case Illustrating the Advantages of Cholecystectomy over Cholecystostomy. Proc. Roy. Soc. M., Sect. Clin., 1921-1922, vol. XV, 1-2, p. 22.
The Relative Merits of Cholecystectomy and Cholecystostomy. Guy's Hospital Rep., 1921, lxxi, 454-460.
15. Sherren: A Comparison of Cholecystostomy and Cholecystectomy. *Brit. J. Surg.*, 1922-1923, x, 135-137.
16. Tavernier & Tixier: Suites eloignees d'une cholecystostomie; degenerescence neoplasique tardive de la vesicule. *Lyon chirurg.*, 1924, xxi, 591-594.
17. Whitaker: Experiences with Cholecystography. *J. A. M. A.*, 1926, lxxxvi, 239-243.

4455 *Greenwood Avenue.*

Analyses, Selections, Etc.

Virginia Physicians Tell of Clinical Tour of Europe.

Dr. James W. Reed, of Norfolk, Va., in the *Virginian-Pilot* of July 18, 1926, gives the following interesting account of a visit by a party of American doctors to the clinic centers of Continental Europe. The tour was conducted by the Interstate Post-Graduate Assemblies of America, sponsored by the Mayo brothers, Crile and other eminent physicians and surgeons, and those eligible to go included any physician in good standing in his State or provincial society.

Thirty-four States and three provinces of Canada were represented in the party, which numbered 98 doctors and members of their families. In addition to Dr. Reed, those from Virginia included Dr. J. E. Rawls, of Suffolk; Mrs. I. E. Benderscheid, of Norfolk, and Dr. M. E. Hundley, and Rev. Chas. M. Wales, of Martinsville.

An account of the tour, as told by Dr. Reed, follows:

A Floating Clinic

"The party assembled in New York, April 26, and sailed for Cherbourg on the S. S. Aragusya, chartered by the Assembly. The voyage across was unique in the history of navigation: It was a floating clinic. Twice a day the after saloon was filled with enthusiasts eager to hear the numerous papers scheduled. The papers were limited to 20 minutes and followed by free discussion of shorter period.

"These sessions did much toward getting the men acquainted and setting forth the manner of men who made up the group. Sixty-five per cent of them were general practitioners, men of wide experience and shrewd judgment. The other 35 per cent were surgeons or specialists. The average level of medical accomplishment was very high. The eminent advisory board contributed prestige by the luster of their names. The atmosphere of the party exemplified American spirit at its best—a medical democracy, each member ready to give and take, none presuming a superiority. Perhaps the most profitable paper read was the scholarly account of the achievements and reminiscences of Sir William Osler, by Dr. Henry W. Cattell, of Washington, D. C. It was a fitting introduction to our tour. There was time, too, on the trip for the usual enjoyment of an ocean voyage, such deck entertainments as bridge, dancing and other social gatherings 'abaft the beam.'

Cherbourg and Normandy

"The party arrived at Cherbourg on May 1st and was taken by special train through Normandy, the apple blossom section of France, on to Paris, where the second assembly was formally opened. The Americans were graciously welcomed by one dignitary after another and then introduced to the scientific program which had been lavishly prepared by a committee headed by Dr. T. de Martel, the foremost surgeon of France.

"Each afternoon the party was scattered to attend clinics and demonstrations at the various medical shrines of Paris. The work in the

afternoon was always interrupted by the hour for tea, which afforded a grateful relaxation and an opportunity to meet informally the masters we had come to hear. The late afternoon was usually filled by a garden party or reception, and the evening entertainment included grand opera parties, sometimes followed by visits to the night clubs. The party left Paris with grateful appreciation for the cordial hospitality, official and individual, which had accompanied the rare medical program afforded it.

On to Rome

"From Paris the party journeyed southward through Lyons, Dijon, Marseilles, Nice, Monte Carlo, crossing the Italian frontier to Genoa, thence to Rome. While here the physicians were privileged to see that master surgeon, Dr. Raffaele Bastinaelli, operate. The party was received most graciously by the Pope and Premier Mussolini, the idol of Italy, and by U. S. Ambassador Fletcher and Mrs. Fletcher. Leaving Rome, we crossed the Apennines to Florence, Pisa, Bologna, Padua, and Milan, in which cities the Royal Universities offered unusual clinics in both medicine and surgery—and always we were accorded genuine hospitality. Particularly did we note with pleasure demonstrations by the internationally known orthopedic surgeon, Dr. Vittori Putti, of Bologna.

"Leaving Italy, we crossed the Italian frontier to Switzerland, the camping ground of American tourists. At Berne and Zurich we were received and entertained most elaborately by the faculties of the universites of these cities, and also by the president and state officials of Switzerland. The purpose of our visit having been accomplished we went to Germany. At Dresden we stopped for a visit to Raphael's 'Sistine Madonna.' Ours was the first delegation of its kind received in Munich and Berlin since the World War. Germany's most prominent professors spoke on the research work done in the past year, the results of which are not known to a majority of physians because the barriers created by the war kept scientists in different countries apart. The American physicians' trip did much to establish a close scientific contact.

Reception in Germany

"To celebrate a renewal of the world fraternity of science, President von Hindenburg, of Berlin, and the minister of science gave receptions at Potsdam palace in honor of the American medical men. Ambassador Schurman also gave a tea at the embassy for the party. At Munich we saw the renowned surgeon Sauerbruch do his famous chest surgery under spinal anaesthesia. No less appreciative was our group of the work of Dr. August Brier in surgery, Dr. Heinrich Finkelstein and Dr. Adelbert Czerny in pediatrics, and of Dr. Friedrich Kraus and Dr. Wilhelm His in medicine.

"Our stay in Austria was at the renowned medical center, Vienna, high in medical and surgical tradition. It was our good fortune to spend several days in the clinics of Dr. Lorenz, the European genius in bloodless surgery; Dr. Fuchs, the world's greatest ophthalmologist; Dr. Anton Eiselberg, dean of the University of Vienna; Dr. von Pirquet, and Dr. Mall in pediatrics. No less instructive were Dr. Graff's lectures and bedside demonstrations in obstetrics. The intensive work done here was of special value, as every physician knows. The greatest medical opportunities possible were given. We were also received here by President Hainisch, of Austria, and by officials of the municipality of Vienna, including the American ambassador.

Welcomed in Prague

"In Prague, the Czechoslovakian capital, we were accorded a most gracious welcome. Here the physicians were the guests of the Imperial Royal German Charles Ferdinand University and the Imperial Royal Czech Charles Ferdinand University, both of which maintain a comprehensive group of medical institutes and clinics. While here the party wes received by the president of Czechoslovakia at his palace—formerly the Royal Palace of Emperor Francis Josef—and was the guest of the government on a trip to Carlsbad and Joachina valley mines, containing the largest known deposit of radium in the world. From here we visited the Netherlands, Amsterdam being our first clinical city, which proved of great scientific value as a goodly number of the professors spoke English fluently. There were elaborate entertainments, including a reception at the palatial home of Baron von Bosch, whose good fortune it was to have an American wife. While here we were guests of the municipal

government in a trip to the Island of Marken, Muerendam and to Vallendam.

Utrecht, Leyden and The Hague had much to offer in clinics and entertainments. At The Hague our party stopped at the famous Scheveningen Beach. We also visited the peace palace, where The Hague conference was held. At Brussels the party was received by the King and Queen of Belgium, and the clinics were no less interesting than those visited in other countries. At this point the party disbanded; some to pursue their travels further and some to return home immediately, but all convinced that their outlook had been broadened and their wits sharpened by going out to see how things are done elsewhere."

Dr. J. E. Rawls, of Suffolk, Va., a member of the same party, in a letter to this office from Brussels. Belgium, says:

"On June 26, 1926, in Brussels the Interstate Post-Graduate Assembly completed its European tour. Three-fourths of the party have sailed, or are sailing, for their respective homes. The remainder are taking extensions to the British Isles. The writer will visit England, Scotland, and Ireland, sailing for the States July 16th and arriving home July 26th.

"The following information will probably be of general interest. The State of Pennsylvania had the largest representation of any other State. Virginia had three doctors, Jas. W. Reed, of Norfolk, M. E. Hundley, of Martinsville, and the writer. Drs. Reed and Hundley are happy fellows of sterling character, men of professional ability and were deeply interested in the clinical work abroad.

"The number of miles traveled was approximately 6.400 by sea and 3,755 by land. Eight countries were visited. There were approximately 360 clinics and demonstrations and forty-eight social events, among which were receptions by King Albert and Queen Elizabeth, of Belgium, several American ambassadors, and a number of municipal and university receptions.

"The general clinical work, especially the surgical in which the writer was especially interested, was, as a rule, of the highest order, showing surgical judgment and skilled technique. To witness so many operate with their special unique methods was interesting, instructive and inspiring.

"It can be truly said that the Interstate Post-Graduate European Assembly afforded a rare opportunity for the physician."

The above account and letter proved of so much interest to us, that we have taken the liberty of presenting them to our readers.

The Causes of Cicatricial Contraction.

In a paper on the above subject, read by J. Shelton Horsley, M. D., of Richmond, Va., before the American Surgical Association at Detroit, May 24, 1926, the author called attention to the fact that:

In surgical literature there has occurred the statement that defects in the common bile duct or the ureter would be satisfactorily repaired if the epithelium would cover the defect, and treatment along this line has been instituted. Most strictures, however, have an epithelial covering. Contractions of the neck following burns have a practically normal epidermis. A histologic study of the epidermis and of the connective tissue in cicatricial contractions of the neck, and of the connective tissue in scirrhous cancer of the breast, in malignant stricture of the bowel, and in cirrhosis of the liver, was made. There appears to be no essential difference from a histologic standpoint between contracting scar tissue and non-contracting scar tissue. Indeed, both of these resemble very closely normal connective tissue as found in the corium and elsewhere.

The origin of connective tissue and of scar tissue is discussed. Baitsell's researches seem to show that connective tissue in the chick embryo and the amphibian originates from a transparent cell-free ground-substance which later becomes fibrillated. H. E. Jordan, of the University of Virginia, thinks that the fibroblasts which develop in the scar tissue from granulation tissue come chiefly from lymphocytes, but to some extent from fixed connective tissue cells and from endothelial cells.

Scar tissue, a type of connective tissue, is a lowly tissue, and requires less nutrition than the more highly differentiated tissues. Consequently, when nutrition is too poor to sustain highly differentiated cells, connective tissue may dominate.

The following classification is given for the causes of cicatricial contraction:

1. Direct Causes of Cicatricial Contraction —Toxic Products Produced By:

a. Burns (by heat, light, or electricity).
b. Chemicals.
c. Bacteria.
d. Cancer.
e. Trauma and cells affected by lack of blood supply.
f. X-ray or radium.

2. Indirect Causes

a. The general disposition of the individual toward scar tissue formation.

b. The portion of the body affected.

c. The absence of strain or tension on the scar.

d. Lack of proper blood supply.

e. The absence of natural resistance toward physiologic secretions or excretions.

f. The quantity of scar tissue.

Each of these causes is discussed. The conclusions are as follows:

1. Cicatricial contraction is due to scar tissue. and covering the surface of a wound with epithelium alone does not prevent contraction except so far as it prevents infection or unnecessary trauma to a raw surface.

2. The cicatricial contraction following X-ray or radium burns differs from other scars in that the deeply penetrating rays cause an overgrowth of vascular endothelium which partially or completely obliterates the blood vessels and makes a greater degree of ischemia.

3. Thre is a biologic resistance possessed by tissues of the body to the normal secretions or excretions of their environment, so that in transplanting tissue this must be taken into consideration.

4. Certain regions of the body, possibly because of some inherent quality or possibly because of mechanical conditions which retard complete extension, are more prone to scar tissue contraction than other regions.

5. As scar tissue is a lowly tissue that can survive on less nutrition and under harder conditions than more highly differentiated tissues, it seems essential in avoiding cicatricial contraction not only to prevent the irritating effects of frequent injuries or of toxic substances, but to provide a blood supply so that the higher tissues may survive and not be overwhelmed by scar tissue.

The County Society

For Better Acquaintance.

With a view to arousing and maintaining interest in the COUNTY SOCIETY, it is requested that, as far as possible, every county in the State should have a county society.

Any county with three or more eligible physicians may organize and apply for a charter from the State Society, thus securing the privilege of representation in the House of Delegates of the State Society at its annual meetings.

Only one component society shall be organized in any county.

County societies which have been inactive should re-organize. Upon request, your Councilor, the President or Secretary of the State Society will help in any way possible.

Inquiries addressed to the MEDICAL SOCIETY OF VIRGINIA, 104½ West Grace Street, Richmond, will have prompt attention.

Do you know that fellowship in the American Medical Association, the largest association of its kind in the world, is dependent upon membership in your State Society, and that membership in your State Society is dependent upon membership in your County Society?

Each County Society shall have general jurisdiction over the medical matters in the County.

Dues in the State Society are five dollars a year, the fiscal year beginning January 1. Without other charge, members receive the "Virginia Medical Monthly," official organ of the Society, and legal defense if sued for alleged civil malpractice.

Members of inactive County Societies! Are you giving "the stranger within your gates" a square deal? You are a member of your State Society. He may only join through his County Society and you do not give him this opportunity, if you fail to have meetings and do not invite him to join with you.

Chartered societies which have not been holding meetings are urged to arrange to get together, re-organize, elect officers, delegates and alternates to the State Society meeting, and take in all eligible doctors in their counties.

If doctors in any county can not arouse activity among themselves, band with an adjoining county which is active, and apply to the Executive Council to have your charters changed to include two or more counties by hyphenating the names.

It is only by co-operation that we can succeed in any undertaking. Let each individual member of the Medical Society of Virginia do his or her part.

Womans Auxiliary

To the Medical Society of Virginia

At the request of the officers of the Auxiliary, this space has been set aside for communications from them regarding matters of interest, both to the profession and to the women members of their families.

All communications should be addressed to Mrs. E. F. Truitt, Secretary, Westover Avenue, Norfolk, Virginia.

The Norfolk Meeting

It is earnestly desired that the women members of the doctors' families will attend the October meeting of the State Society "en masse."

Everything possible will be done to make their visit enjoyable. In addition to the usual social affairs, there are many attractive and historic points to be visited. Hard surface roads make them all easy of access.

A short tour would take in Cape Henry, where the first permanent English settlers landed in 1607; Jamestown Island where the party settled; Williamsburg where the first government in this country was founded; and Yorktown where Cornwallis surrendered to General Washington.

Each of these shrines is filled with all kinds of interesting relics, the most valuable in this country.

Norfolk itself offers many points of interest, and the various beaches will be most attractive in October, the great developments at Virginia Beach being especially interesting.

Every woman attending the meeting is expected and urged to take part in the sessions of the Woman's Auxiliary, which will still give her ample time to see the sights, visit the places of amusement and shop!

A cordial and pressing invitation is extended to each and every one of you.

Miscellaneous

Proposed Constitution and By-Laws for the Medical Society of Virginia.

To the Members of the Medical Society of Virginia:

The Executive Council of the Medical Society of Virginia appointed the undersigned committee for the purpose of making a study of the present needs of this Society and recommending a revision in the Constitution and By-laws to meet such needs. As a result of its work, the Committee submits the changes in the Constitution and By-laws given in the following copy.

These proposed changes are presented and published in order that they may be considered and voted on at the next annual session of the Society. It is hoped that each member of the Society will read these proposed changes before the annual session. It is also hoped that members will make suggestions or amendments to these proposed changes, if in that way they can be improved.

Respectfully submitted,

Committee: E. L. Kendig, *Chairman*, F. H. Smith, C. R. Grandy.

CONSTITUTION

Constitution of the Medical Society of Virginia, incorporated by an act of the General Assembly of Virginia, approved January 14, 1871.

Article I.—Title

The name of this organization shall be the Medical Society of Virginia. The words "the Society" in this Constitution and its by-laws shall be construed to mean "the Medical Society of Virginia."

Article II.—Purposes

The purposes of the Society are to promote the science and art of medicine, the protection of public health, and the betterment of the medical profession.

Article III.—Component Societies

The State shall be divided into component societies of one or more counties.

Article IV.—Composition of the Society

White physicians in Virginia, not practicing Sectarian Medicine, are eligible to active membership. Provision may be made for associate membership.

Article V.—House of Delegates

The House of Delegates shall be the business and legislative body of the Society, and its membership shall consist of the President, the President-elect, and Delegates elected by the component societies.

Article VI.—Council

The council shall be the executive and finance committee of the House of Delegates, and shall have charge of the business affairs of the Society when the House of Delegates is not in session. The council shall consist of the President, President-elect, and one member from each Congressional district of the State, elected by the House of Delegates from the membership of the House.

Article VII.—Officers

The officers of the Society shall be a President, a President-Elect, and an Executive Secretary-Treasurer. The office of Executive Secretary-Treasurer may be held by a non-member.

Article VIII.—Standing Committees

The Standing Committees of the Society shall be: (1) Scientific Work, (2) Public Policy and Public Health, (3) Program and Publication, (4) Medical Defense and Medical Economics, (5) Medical Education and Hospitals. (6) Membership, (7) Ethics and Judiciary.

Article IX.—Terms of Officers

The President, President-elect, the Executive Secretary-Treasurer, the Councilors, and the Standing Committeemen shall be selected during the annual session. They will begin service at the adjournment of such annual session and continue until the end of the term, or until a successor qualifies. The term of the officers and standing committeemen shall be one year. The term of councilors shall be two years.

Article X.—Annual Session

There shall be an annual session of the Society and the date shall be determined by the House of Delegates.

Article XI.—Funds

Funds for the Society may be raised by a per capita assessment, voluntary contributions and other business activities. The funds shall be expended to carry out the general purposes of the Society.

Article XII.—Referendum

A general meeting of the Society or the House of Delegates may order a referendum on any matter. Such referendum shall be taken by a well advertised general meeting of the Society and one hundred members shall be necessary for a quorum. The results of the referendum shall be final.

Article XIII.—Seal

The Society shall have a common seal. The power to change or renew the seal shall rest with the House of Delegates.

Article XIV.—By-Laws

The Society may adopt by-laws not in conflict with this constitution.

Article XV.—Amendments

This constitution may be amended at an annual session by a two-thirds vote of the House of Delegates, provided such amendment is previously published in the official publication of the Society. All previous constitutions of the Society are repealed when this constitution is adopted and put into effect.

Article XVI.—When in Force

This constitution shall be in force in such manner and at such time within one year as the general meeting adopting the same may determine.

BY-LAWS

By-laws of the Medical Society of Virginia, incorporated by an act of the General Assembly of Virginia, approved January 14, 1871.

Article I.—Membership

Section 1.—Members of the Society are classified as active and associate. Members in good standing in a component society constitute the active membership of the Society. Those, not members of a component society, constitute the associate membership. Members of the Society at the time of the adoption of these by-laws will retain membership in the Society, and, as herein provided, be automatically classified as active and associate members.

Section 2.—The privileges of voting, holding office, and serving on committees is limited to the active membership. In all other respects the status of the active and associate members is the same.

Section 3.—Members living out of the jurisdiction of a component society are classified as associate members. Active members, who move out of the State, become associate members of the Society. Teachers of the Sciences

allied to Medicine and physicians living a part of the time in the State may, upon recommendation of the Membership Committee, be elected to associate membership by the House of Delegates. Associate members may resign membership by giving notice to the Executive Secretary-Treasurer, or, on recommendation of the Ethics and Judiciary Committee, be suspended or expelled by the House of Delegates for sufficient cause. Any associate member, eligible to membership in a component society, may be required by the council to make application for membership in such component society.

Section 4.—For long, faithful or distinguished service, the House of Delegates, upon the recommendation of the membership committee, may elect annually two resident members and one non-resident physician to honorary active or associate membership.

Section 5.—Every member, after verification of membership from the rolls, shall register before taking part in any of the proceedings of the annual session. All guests are requested to register.

Section 6.—Only active members in good standing in a component society and associate members in like standing in the State organization shall be entitled to the rights and benefits of the Society. No member shall be entitled to the rights and benefits of the Society who has not paid the initiatory annual per capita assessment or who is delinquent for more than one year in the payment of subsequent assessments.

Article II.—General Meetings

Section 1.—The general meetings of the Society are open to all registered members and guests.

Section 2.—At each annual session there shall be an address by the President and not more than three orations by invited guests.

Section 3.—With the exception of the address by the president and invited guests, no address, paper, or other contributions on the program shall be longer than twenty minutes.

Section 4.—The privilege of the floor belongs to members and invited guests.

Section 5.—No one shall discuss a paper more than once and then for only five minutes.

Section 6.—No contribution shall appear in the program unless the title is sent to the Executive Secretary-Treasurer at least five weeks before the annual session.

Section 7.—If the author is not present when a paper is called, it shall be placed at the end of that section of the program.

Section 8.—All papers and contributions are the property of the Society and cannot be published elsewhere without the consent of the Publication Committee.

Section 9.—The scientific work of the Society may be divided into two or more sections.

Section 10.—A rule governing the program or conduct of a general meeting may be changed only by a two-thirds vote of the members present.

Section 11.—At a general meeting before the close of the annual session, a report of the transactions of the House of Delegates shall be received.

Article III.—House of Delegates

Section 1.—The House of Delegates shall be the business and legislative body of the Society.

Section 2.—The meetings of the House of Delegates shall be during the annual session.

Section 3.—Each component society shall elect annually to membership in the House of Delegates one delegate and one alternate for each fifty members or major fraction thereof, or as the component society may elect, one delegate and one alternate for each county in such component society. In any event, each component society is entitled to at least one delegate and one alternate in the House of Delegates. The President and the President-elect shall be ex-officio members of the House of Delegates. When the House of Delegates elects one of its members to membership on the Council, such delegate will automatically continue as one of the allotted representatives of his component society in the House of Delegates until the end of his term as Councilor.

Section 4.—The House of Delegates shall have one regular meeting during the annual session and may have such other meetings as necessity may require.

Section 5.—Twenty delegates, representing at least ten component societies, shall constitute a quorum of the House of Delegates.

Section 6.—The President shall preside over the meetings of the House of Delegates. The Excutive Secretary-Treasurer shall be the Secretary.

Section 7.—The House of Delegates shall determine the eligibility of its own members. The president may appoint a committee on credentials, if the eligibility of any member is contested.

Section 8.—The House of Delegates shall elect officers of this Society as provided for in Article IV. of the By-laws.

Section 9.—The House of Delegates shall elect delegates and alternates to the House of Delegates of the American Medical Association in accordance with the constitution and by-laws of that body. Such delegates shall be elected by ballot. On the ballot each member will be allowed to vote for as many of the nominees as there are delegates and alternates to be elected. Those receiving the highest votes will be declared elected as delegates and those receiving the next highest votes will be declared elected as alternates.

Section 10.—The House of Delegates shall nominate to the Governor of Virginia at the proper time in accordance with the laws of Virginia, members of the State Board of Medical Examiners, and such nomination shall be made by ballot in the same manner as officers are elected.

Section 11.—At each annual session, the House of Delegates shall consider budget recommendations from the council, and using this recommendation as a basis, adopt a budget for the Society for the next fiscal year. This budget shall be based on the expected income and expenditures during this period.

Section 12.—The House of Delegates, upon recommendation of the Council, may revoke the charter of a component society for violation of the laws of the Society.

Section 13.—The House of Delegates may appoint special committees from its own membership or from the membership of the Society.

Section 14.—All resolutions and memorials issued in the name of the Society must be authorized by the House of Delegates.

Section 15.—All officers and delegates elected, all nominations made to the Governor and a "resume" of all other business transactions by the House of Delegates during the previous twelve months shall be reported to the Society at a general meeting before the close of the annual session.

Article IV.—Election of Officers

Section 1.—The House of Delegates, at its first meeting of the annual session, may elect a Committee on Nominations, consisting of one member from each Congressional District. This Committee shall report to the House of Delegates the result of its deliberation in the form of a ticket containing the names of one or more members for each of the offices to be filled at the annual session. If such Committee is elected, any member of the House of Delegates shall have the privilege of adding one or more names to any of the nominations. The election of officers shall be by ballot. A majority vote is necessary for election. The lowest nominee will be dropped on each ballot until one receives a majority vote. In case of a tie, it will be decided by lot.

Section 2.—No person is eligible for office who has solicited votes for any office for a period of two years.

Section 3.—Only active members in good standing are eligible to office.

Section 4.—The House of Delegates shall at each annual session elect a President-elect for a term of one year. At the end of this term the President-elect automatically becomes President for a term of one year.

Section 5.—The House of Delegates shall at each annual session elect an Executive Secretary-Treasurer for a term of one year.

Section 6.—The House of Delegates shall at each annual session elect, for a term of two years, councilors from the odd numbered Congressional Districts on the odd years and from the even numbered Congressional Districts on the even years. At this time the House of Delegates shall also fill any vacancy in the membership of the Council.

Section 7.—In case there is a vacancy in the office of President-elect, or in case the President-elect was appointed pro tempore by the Council, the House of Delegates at the annual session shall also elect a President for the following term.

Article V.—Duties of Officers

Section 1.—The President shall be the executive head of the Society.

Section 2.—The President shall be the presiding officer of the general meetings of the Society, president of the House of Delegates, chairman of the Council, and ex-officio member of all Committees. The President shall

vote in the general meetings, in the House of Delegates, and in the Council only in case of a tie. If it is so that the President or the President-elect cannot be present, the President shall appoint a member to preside over the general meeting, the House of Delegates, and the Council. If such appointment is not made, the members present may select the presiding officer.

Section 3.—The President shall deliver the annual oration and shall have the privilege of inviting as many as three orators at the annual session.

Section 4.—The President shall at the annual session, before he assumes the duties of this office, appoint all standing committees and announcement of the personnel of these committees shall be made at the general meeting when the House of Delegates makes its report.

Section 5.—The President shall fill any vacancy in the Council, delegates to the American Medical Association, and standing committees, and such appointments shall stand until the end of the next annual session.

Section 6.—The President-elect shall be an ex-officio member of the House of Delegates and an ex-officio member of the Council. The President-elect shall act for the president in his absence or disability, and shall automatically succeed to the presidency at the end of the term or sooner if vacancy occurs.

Section 7.—The Executive Secretary-Treasurer shall be the executive agent of the Society. The Executive Secretary-Treasurer shall be the Secretary of the general meetings, secretary of the House of Delegates, secretary of the Council, and general manager of the official publication of the Society.

Section 8.—The Executive Secretary-Treasurer shall be the custodian of all property of the Society, provide for registration of members at general meetings, keep a card index of members, conduct the general correspondence of the Society, and with the consent of the Council employ necessary assistance.

Section 9.—The Executive Secretary-Treasurer shall collect all money due the Society and pay out these funds upon written order of the President, or upon his designated authority. The Executive Secretary-Treasurer shall give a bond approved by the Council.

Section 10.—The Executive Secretary-Treasurer shall mail notices to members two months before the annual session asking for papers and shall, under the direction of the program and publication committee, make off and send to each member a program of the annual session.

Section 11.—At each annual session the Executive Secretary-Treasurer shall make a complete yearly report to the House of Delegates.

Article VI.—Council

Section 1.—The Council shall consist of the President, President-elect and one member from each Congressional District, elected as provided in Section 6, Article IV of the by-laws. The Council shall be the executive and finance committee of the House of Delegates and shall have charge of the business affairs of the Society when the House of Delegates is not in session. The President shall be the Chairman of the Council and the Executive Secretary-Treasurer shall be the Secretary.

Section 2.—Each district Councilor shall be the organizer, peacemaker, and censor for his district. A district councilor shall visit each component society in the district once each year.

Section 3.—Four members of the Council shall make a quorum. Actual expenses may be paid members, attending meetings of the Council in the interim between the annual sessions.

Section 4.—The Council shall submit to the House of Delegates at its first meeting of the annual session a proposed budget for the next year. All salaries paid by the Society are to be fixed by the Council.

Section 5.—The Council shall be charged with the duty of organizing the whole State into component societies and at each annual session shall report on this work to the House of Delegates with recommendations. The Council shall recommend to the House of Delegates the revocation of a charter of a component society when such component society flagrantly breaks the rules of the society.

Section 6.—The Council shall provide offices for the Society headquarters.

Section 7.—The Council shall make diligent efforts to collect past due per capita assessments.

Article VII.—Standing Committees

Section 1.—The Standing Committees of the Society shall be as follows:

1. Scientific Work,
2. Public Policy and Public Health,
3. Program and Publication,
4. Medical Defense and Medical Economics,
5. Medical Education and Hospitals,
6. Membership,
7. Ethics and Judiciary.

Each of these committees shall be composed of five members and the president ex-officio. They shall be appointed by the president as provided in Section 4, Article V of the By-laws, and the first named shall be chairman.

Section 2.—The Committee on Scientific Work shall have charge of the scientific exhibits of the Society. The object of this Committee is to stimulate interest in scientific and research work among the members of the Society.

Section 3.—The Committee on Public Policy and Public Health shall endeavor to secure and enforce legislation in the interest of public health and scientific medicine. This Committee shall co-operate with any like Committee appointed from the component societies.

Section 4.—The Committee on Program and Publication shall have made up the program for the annual session. This Committee shall elect an editor and conduct the affairs of the official publication of the Society. Such affairs shall be handled according to the expressed policy and the adopted budget of the Society.

Section 5.—The Committee on Medical Defense and Medical Economics shall have charge of the medical defense of members. All expenditures of funds for this purpose must be authorized by the House of Delegates or the Council. The Committee shall make a study and submit recommendations to the House of Delegates on matters of medical economics.

Section 6.—The Committee on Medical Education and Hospitals shall endeavor to bring about co-operation of the Society with the medical schools and hospitals of the State in order to maintain the best standards in these institutions and thereby assist in the growth and development of medical science in the State.

Section 7.—The Committee on membership shall pass upon applications for membership of those not members of a component society and make recommendations for honorary membership. The Committee shall also, through co-operation with the component societies, prepare proper obituaries for deceased members. All actions of the committee shall be reported to the House of Delegates.

Section 8.—The Committee on ethics and judiciary shall consider all matters involving ethics and conduct of members on appeal from the component societies and prima facie in cases not under the jurisdiction of a component society. The committee shall make recommendations in such cases to the House of Delegates.

Article VIII.—Dues and Assessments

Section 1.—There shall be an annual assessment of $5.00 upon each member. This may be changed by the House of Delegates. The annual dues shall be assessed at the rate of $1.25 per quarter or major fraction thereof. The dues for each calendar year shall be paid in one payment and are payable before December 31st of each year.

Section 2.—The fiscal year of the Society shall correspond with the calendar year.

Section 3.—The Council is charged with the duty of collecting or adjusting past due per capita assessments. A member, whose dues are twelve months in arrears, shall be automatically dropped from the rolls of the Society. For good reason the Council may excuse a member for such delinquency or may reinstate such member upon the payment of all or a part of such past due assessments.

Section 4.—Honorary members and others deserving it may be exempted from the payment of annual dues by the Council. Any member over 70 years of age may be so exempted by the Executive Secretary-Treasurer.

Article IX.—The Official Publication

The official publication of the Society shall be known as the Virginia Medical Monthly.

Article X.—Co-operative Measures

Section 1.—The House of Delegates may provide for medical defense and add a per capita assessment to meet the expense of same.

Section 2.—The House of Delegates may adopt any sound and ethical group business measure beneficial to the Society, provided it is optional to individual members.

Article XI.—Component Societies

Section 1.—The component societies shall be those holding charters from the Society. All component county societies holding charters at the time of the adoption of these by-laws will retain such charters as component societies.

Section 2.—There shall be only one component society in a county. A component society may embrace one or more counties. The name of a component society must in some way suggest its locality.

Section 3.—The Council shall endeavor to organize into component societies all the counties of the State. At each annual session the Council shall report to the House of Delegates the unorganized counties and recommend a plan for organizing each of such counties into a component society. The House of Delegates may direct the Council to make further effort to organize such a county or it may assign an unorganized county to a nearby component society. Such assignment cannot be made to a component society unless agreed to by the representatives of that component society in the House of Delegates.

Section 4.—A component society consisting of two or more counties may upon petition to the Council be divided and given separate charters, if the Council is of the opinion that such division is in the interest of medical organization.

Section 5.—Each component society shall judge the qualification of its own members.

Section 6.—The component society shall drop from its rolls a member whose license to practice medicine in the State has been revoked or whose membership in the State Society has been lost for non-payment of dues.

Section 7.—A member expelled by a component society can appeal to the State Society through the Ethics and Judiciary Committee.

Section 8.—A member may join a more convenient component society in an adjoining county, provided the component society of the county in which such member resides gives its consent.

Section 9.—A member moving from a county of one component society to the county of another may get a certificate of membership. This certificate shall be used in applying for membership in the component society to which such member is moving. Pending acceptance or rejection of such application, membership will be retained in the original component society.

Section 10.—Each component society will send to each annual meeting of the Society, its number of delegates and alternates fixed by Section 3, Article III of the by-laws.

Section 11.—The Secretary of each component society shall keep a roster of its members, including name, address, year of graduation, college, date of State license, and such other information as may be desired by the Society.

Section 12.—Each component society shall appoint one member as an auxiliary to the State Committee on Public Policy and Public Health.

Section 13.—The component societies shall co-operate with the officers of the State Society to carry out the plans, laws, and purposes of this organization.

Article XII.—Principles

The ethical principles governing the members of the American Medical Association shall govern this Society.

Article XIII.—Rules of Order

The deliberations of this Society shall be conducted in accordance with parliamentary usage as defined in Roberts Rules of order.

Article XIV.—Amendments

These by-laws may be amended by a two-thirds vote of the House of Delegates, provided such amendment is proposed in writing and has laid on the table for one day. All previous by-laws of this Society are repealed when these by-laws are adopted and put into effect.

Article XV.—When in Force

These by-laws shall be in force in such manner and at such time within one year as the general meeting adopting same shall determine.

The Truth About Medicine

In addition to the articles enumerated in our letter of May 29th, the following have been accepted:

Armour & Company
- Pituitary Liquid (Surgical)-Armour
  - Ampules Pituitary Liquid (Surgical)-Armour 1 c.c.

Parke, Davis & Company
- Pertussis Immunogen
- Pneumococcus Immunogen
- Silvol Dougies 5 Per Cent
- Silvol Ointment 5 Per Cent
- Vaginal Suppositories Silvol 5 Per Cent

Powers-Weightman-Rosengarten Company
Calcium Phosphate Tribasic—P. W. R.
Magnesium Phosphate Tribasic—P. W. R.
Nonproprietary Articles
Tribasic Calcium Phosphate
Tribasic Magnesium Phosphate

NEW AND NON-OFFICIAL REMEDIES

Isacen.—Diacetyldioxyphenylisatin. The diacetyl derivative of dihydroxyphenylisatin. Isacen passes through the stomach unchanged: when it reaches the intestine, a gradual splitting off of dioxyphenylisatin takes place under the influence of the alkaline content of the intestine. The dioxyphenylisatin thus produced is stated to be non-toxic, not to be absorbed. and to be excreted entirely through the feces. Isacen acts as a laxative or purgative, depending on the dosage employed. It is supplied in the form of tablets, containing 0.005 Gm. Hoffman-LaRoche Chemical Works, New York. (Jour. A. M. A., June 5, 1926. p. 1769).

Digitalis Dispert.—An extract of digitalis, obtained by extraction of digitalis leaves with cold water and evaporation of the extraction by a special process. It is standardized by the minimum lethal dose frog method of Straub so that 1 Gm. represents 1,900 lethal frog doses. Digitalis dispert has the actions and uses of digitalis. The product is marketed in the form of 0.8 Gm. tablets. Schering & Glatz, Inc.. New York.

Pertussis Immunogen.—A bacterial antigen obtained by agitating live pertussis bacilli with physiological solution of sodium chloride and separating the liquid from the organisms; the extract is free or nearly free from bacterial cells and toxin. There is some evidence that this material will yield approximately the same results as the ordinary pertussis bacillus vaccine (New and Non-official Remedies, 1925, p. 354). The product is marketed in 10 c.c. vials. Parke, Davis & Co., Detroit.

Pneumococcus Immunogen.—A bacterial antigen, obtained by agitating live pneumoccocci (Types I, II and III) with physiological solution of sodium chloride and separating the liquid from the organisms; the extract is free or nearly free from bacterial cells and toxin. There is some evidence that this material will yield approximately the same results as the ordinary pneumococcus vaccine (New and Non-official Remedies, 1925, p. 355). The product is marketed in 10 c.c. vials. Parke, Davis & Co., Detroit. (Jour. A. M. A., June 19, 1926, p. 1911).

PROPAGANDA FOR REFORM

Allonal Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that Allonal is a preparation containing a combination of allylisopropyl barbituric acid and amidopyrine mixed with free allylisopropyl barbituric acid and an excess of amidopyrine. The combination between allylisopropyl barbituric acid and amidopyrine is readily decomposed into its components, and the firm's claims are based on the assumption that Allonal contains these two ingredients. The claim is made that allyliosopropyl barbituric acid, "the new and distinctive component," possesses a greater hypnotic power than any of the other well known hypnotics of the barbituric acid series, but that it is relatively less toxic. The Council finds that the evidence cited by the firm does not substantiate this claim, and concludes that Allonal must be considered as the result of an effort to combine in one preparation the hypnotic properties of a member of the barbituric acid series and the analgesic properties of amidopyrine. The firm publishes long lists of conditions said to have been relieved by this combination, the only individualization being the recommendation of "1 to 2 tablets" for some and of "2 to 4 tablets" for others. In none of the clinical reports submitted by the firm does the author refer to observations in which either component of the drug was used separately or in which the relative proportion was varied: the Council holds that the absence of such data deprives these reports of much of their value as arguments for the use of Allonal. The new hypnotic, allyliosopropyl barbituric acid, for which great superiority is claimed, is thus made available to physicians only in fixed combination with an antipyretic and analgesic drug which may not be needed and which in itself frequently causes untoward symptoms. The Council finds Allonal unacceptable for New and Non-official Remedies because (1) the therapeutic claims advanced are deemed unwarranted by the facts; (2) the name is not descriptive of its composition, and (3) there is no satisfactory evidence that the administration of a mixture of allylisopropyl barbituric acid and amidopyrine in fixed proportion (or of a feeble chemical compound of these two that behaves in the stomach like a mixture) is rational. (Jour. A. M. A., June 12, 1926, p. 1853).

Limitations of Cod-Liver Oil in Rickets.—Cod-liver oil, long recognized as having antirachitic potencies, has been heralded as a veritable specific, alike for the prevention and the cure of rickets. Under the unfeigned encouragement of the medical profession, child welfare agencies everywhere have preached the doctrine of the liberal administration of cod-liver oil in infancy. The public has been informed through numerous channels, including even the legitimate advertising and the sales promoting of manufacturers. In consideration of the protests against the indiscriminate administration of iodine in the prophylaxis of goiter, it may be asked to what extent the promotion of the use of cod-liver oil in infancy is on a basis that is defensible from every standpoint. Is it effective? Does it involve possibilities of unsuspected harm? Is it worth while? Should it be modified in any way? Evidence is already available that the highest expectations are not consistently realized. However, the unqualified success obtained with cod-liver oil under carefully controlled conditions of many clinicians should give assurance of the wisdom of its inclusion in prophylaxis. What is needed above all at present, is a better understanding of how rickets may be averted in the home as well as in the well ordered clinic. (Jour. A. M. A., June 19, 1926, p. 1912).

L. M. Hunter's Epilepsy Cure.—L. M. Hunter. M. D., Little Rock, Ark., sells "Dr. Hunter's Rational Treatment for Epilepsy," a crude piece of mail order quackery with the indirect aid and assistance of H. S. Brevoort, M. D., and a member of the state board of health in Arkansas, L. L. Marshal, M. D. The cure itself and its methods of exploitation do not differ widely in their sordid details from the average mail order quackery. A "complete course" of "Dr. Hunter's Rational Treatment for Epilepsy" was submitted to the A. M. A. Chemical Laboratory for analysis. The Laboratory found the "treatment" to consist of capsules containing essentially 0.07 Gm. (approximately 1 grain) of phenobarbital (luminal) per capsule. This alleged "true specific for epilepsy" which "stops seizures from the first day used" is simply phenobarbital (luminal)—a powerful drug of distinctly habit forming tendencies, the indiscriminate use of which is not safe. (Jour. A. M. A., June 19, 1926, p. 1928).

Vitamin B and "Vitality."—During the excessive enthusiasm a few years ago for the then newly dis-

covered vitamins and the exalted hope of great physiologic accomplishment through their administration in a therapeutic or prophylactic way, these food factors—notably the vitamin B of yeast—were often expected to "pep up" the jaded person. Somehow it was assumed that the vitamin must "stimulate" one function or another. The actual investigations have, however, been disappointing in some ways. Secretion has not as yet been discovered to be stimulated or "pepped up" in anw way. It has been demonstrated that deprivation of vitamin B does not of itself lower the basal metabolism, nor is the latter altered by large doses of vitamin-bearing products. So far as the basal heat production is a measure of "vitality," it has been shown that the ingestion of amounts of vitamin B in large excess over the minimum requirements for growth and continued well being does not benefit an animal.

Book Announcements

New and Nonofficial Remedies, 1926, containing descriptions of the articles which stand accepted by the Council on Pharmacy and Chemistry of the American Medical Association on Jan. 1, 1926. Cloth. Price, postpaid, $1.50. pp. 459+XLIII. Chicago: American Medical Association, 1926.

New and Nonofficial Remedies is the publication of the Council on Pharmacy and Chemistry through which this body annually provides the American medical profession with disinterested critical information about the proprietary medicines which are offered to the profession and which the Council deems worthy of recognition.

An examination of the preface shows that in addition to inclusion of the new drugs which were accepted during the past year, the book has been extensively revised. Many of the preparations listed in the previous edition have been omitted and the descriptions of others have been revised to bring the statements into accord with present day knowledge.

The book contains a cumulative appendix (printed on buff paper), which is a list of references to reports of the Council and to other publications dealing with articles not described in New and Nonofficial Remedies. This appendix is thus a valuable and quite extensive bibliography of proprietary and unofficial preparations.

It has been stated that the success of the endeavors of the Council on Pharmacy and Chemistry will depend less on the work done by the Council than on the support that is given by the medical profession and that this support can be most efficiently given by physicians by confining their use of proprietary medicines to those that have been found acceptable for inclusion in New and Nonofficial Remedies. Every physician has need for a book of reference such as this volume to which he may turn for trustworthy information with regard to proprietary medicines.

Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1925. Cloth. Price, postpaid, $1.00. pp. 90. Chicago: American Medical Association, 1926.

This volume contains the reports of the Council on Pharmacy and Chemistry that have been adopted and authorized for publication during 1925. Some of these reports have appeared in *The Journal of the American Medican Association.* Others are now published for the first time.

The annual volumes of the "Council Reports" may be looked upon as the companion volumes to New and Nonofficial Remedies. While the latter describes the medicinal preparations that are found acceptable, the former contain reports on the products that were not accepted.

The volume also contains reports on products which were included in former editions of New and Nonofficial Remedies but which will not appear in the 1926 edition because they were found ineligible for further recognition. It also contains reports of a general nature.

Physicians who keep fully informed in regard to the value of proprietary remedies will wish to own this book.

Hay-fever and Asthma. A practical Handbook for Hayfever and Asthma Patients. By RAY M. BALYEAT, M. D., Instructor in Medicine in the University of Oklahoma Medical School; Director of the Oklahoma Asthma and Hay-Fever Clinic, Oklahoma City, etc. Philadelphia. F. A. Davis Company, Publishers. '1926. 8 vo. of 198 pages with memoranda pages. 27 illustrations. Cloth. Price, $2.00.

Clinical Pediatrics. By JOHN LOVETT MORSE, M. D., Professor of Pediatrics, Emeritus, Harvard Medical School; Consulting Physician at the Children's, Infants' and Floating Hospitals, Boston. Philadelphia and London. W. B. Saunders Company. 1926. Octavo of 848 pages. Illustrated. Cloth. Price $9.00 net.

Elements of Pathology. By ALLER G. ELLIS, M. D., Rockefeller Foundation Visiting Professor of Pathology and Director of Studies, Medical Department of Chulalongkorn University, Siam; One-time Associate Professor of Pathology, Jefferson Medical College, Philadelphia. Philadelphia. P. Blakiston's Son and Company, 1012 Walnut Street. Octavo of 544 pages with 95 illustrations. Cloth. Price $5.00.

Virginia Medical Monthly

FOUNDED BY LANDON B. EDWARDS, M. D., APRIL, 1874.
OWNED BY THE MEDICAL SOCIETY OF VIRGINIA.
PUBLISHED BY THE PUBLISHING COMMITTEE.
A. G. BROWN, Jr., M. D., Chairman, Richmond, Va.
B. R. TUCKER, M. D., Richmond, Va.
P. W. HOWLE, M. D., Richmond, Va.
E. L. KENDIG, M. D. Victoria, Va.
A. L. GRAY, M. D., Richmond, Va.
ALEX. G. BROWN, Jr., M. D., Editor.
AGNES V. EDWARDS,
Business Manager and Secretary-Treasurer.

All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $2.00 per annum in advance.
Single Copies 20c.

Vol. 53. AUGUST, 1926 No. 5

Editorial

Iodine Medication and the Thyroid Gland.

The popular use of iodine in the thyroid treatment at the present time makes the consideration of the subject one of interest. In fact, iodine is no longer professional in its limitations. Iodine is now advertised in lay circles. Iodine is recommended, in the form of iodized salt and iodized water, for the prevention of goiter. The practice of iodine medication has assumed nation-wide proportions, and it may be said, with certain qualifications, to have apparently taken on the color of wide-spread addiction which may require prohibitory laws to be enacted in order to protect the unwary. But seriously, one may say that, largely from the propaganda on iodized table salt, the use of iodine has taken on aspects that should be considered in order to rightly evaluate the real needs and use of iodine in feeling or in therapy. The laity are now buying iodized salt for cooking and table use, they are seeking at the drug stores iodine preparations for local use on the thyroid gland and they are urging physicians to prescribe iodine without adequate and proper study of needs or requirements for this drug. While its presence in the food and drink is desirable and necessary, its artificial adaptation to food and drink, or its use as medicine should be always carefully supervised and controlled. The same applies to other mineral ingredients of food and drink commonly supplied to the body by this source. Do we seek to give by control in water or food, if artificially introduced, such inorganic minerals as calcium, sodium or potassium? Iodine is apparently more potent and more foreign than these minerals, and in excess iodine may be extremely harmful in upsetting the balanced operation of a vital gland, the thyroid, which presides over the general nutrition and metabolism of the body by aiding iodine elaboration.

Besides there is yet a bit of confusion in medical circles upon the whole iodine question, as one school of thought sets forth one point of view and another school another point of view, if not in contradiction certainly not in full accord. It would seem, therefore, that readers of the Virginia Medical Monthly might have presented to them in brief enough on this important question to give some idea of the bearing of iodine upon thyroid medication, and also to emphasize its harmful trend in certain cases.

It is possible too for the reader, upon this suggestion, to pursue the inquiry to a more complete study by following up the literature on the subject which has appeared in medical publications during the last five years.

Induced Hyperthyroidism

Kimball,* of Cleveland, in a series of 2,659 cases of hyperthyroidism treated between March 5, 1921, and September 1, 1925, reports, that in 309 of these cases, apparently, from all the information obtainable, the symptoms of hyperthyroidism had been precipitated or made worse by the use of iodine. Of these 309 cases, six cases had been using iodized salt, thirty-seven had been taking iodine self-prescribed, some using a solution of sodium iodide, others using applications of the tincture of iodine over the gland. In 266 of these cases, 84 per cent, "the physicians had prescribed large doses of iodine to be taken over a long period of time, and this treatment had been given in spite of the fact that the goiter was of long standing and on many cases nodular in type."

Hartsock† under the title "Iodized Salt in the Prevention of Goiter," having been impressed by a great increase in evidence of hyperthyroidism and particularly by the appearance of an unusual type of hyperactivity in men, discusses in more or less detail the effect of iodized salt as an active cause of in-

*Journal A. M. A., Nov. 28, 1925.
†Journal A. M. A., May 1, 1926, pg. 1334.

duced hyperthyroidism citing his experience in a group of men patients who had used iodized salt. In an analysis of hyperthyroidism in sixteen men, the use of iodized salt in family cooking appeared to be a plausible explanation of from 25 to 50 per cent as the cause of hyperactivity of the gland. Ten of the cases showed a basal metabolism rate of from plus 26 to plus 71; nearly all were doing mental work; the ages ranged from 32 to 55 years; the onset of symptoms was invariably associated with the practice of using iodized salt, occurring within one to eighteen months. The initial symptoms were (1) loss of weight and the appearance of usual weakness, (2) nervous and heart symptoms; (3) no exophthalmus, although a staring expression was evident (4) thyroid was small, firm, slightly palpable only, but with thrill and bruit (5) foci of infection were demonstrable or strangely suspected in each case.

The Cleveland Clinic, where an average of 1,500 cases of hyperthyroidism are seen annually, afforded the author opportunity to make the observation that there were very few cases of hyperthyroidism seen in persons between the ages of 20 and 35, but there were many who, after using the iodized salt, suffered from nervous symptoms, as insomnia, irritability, depression, lack of concentration, emotional disturbances, sweating, flushing, palpitation of the heart, with a loss of weight and endurance; iodine rash and acne vulgaris were more frequent.

If the foreging illustrations from current medical publications may be relied upon to show that iodine may and has become harmful when taken without the proper safeguards and proper administration, one may naturally turn to the question, how is iodine to be used and in what cases is it useful and when and how is it harmful?

It is agreed that iodine is beneficial to patients under given conditions. Marine has shown the relation of iodine to the structure and function of the thyroid gland. Kimball, under the direction of Marine, has given iodine to several thousand school children in Akron, Ohio, and he reached the following conclusions, which every practicing physician may keep in mind:

(1) Simple goiter can be prevented by the administration of small amounts of iodine.

(2) One-third of the cases of simple goiter disappear, or are decreased markedly by the administration of a small amount of iodine.

(3) The administration of small amounts of iodine does not produce a toxic condition (exophthalmic goiter).

Virginia probably lies without the goiter zone. According to Hayburst cited editorially in *J. A. M. A.*, June 26, 1926, goiter is most frequently found in geographic locations of glacial formation. The absence of iodine in the soil of glacial formations resulted from the removal of iodine salts in this period, by the melting of ice crust.

As a synopsis of a well presented opinion of a recent author, coming from a section of the country where thyroid and goiter have been widely studied as a result of the abundant material available, as well as the excellent facilities afforded by the Cleveland Clinic, one may note with profit the conclusions of Hartsock, in his recent paper on iodized salt. We shall avail ourselves of editorial license by giving a selected number of Hartsock's statements on iodine administration.

1. Iodine adminstration in small quantities, periodically, to children under the age of puberty, is an effective preventive of simple goiter.

2. At the age of puberty, before iodine is prescribed, a careful examination of the thyroid gland should be made by a physician to determine whether fetal adenomas are present. If iodine is given it should be stopped immediately upon the appearance of toxic symptoms.

3. The continuous use of iodine should never be practiced by adults. When given to adults frequent observations should be made upon pulse and weight.

4. Under no circumstance should iodine be given to adults with fetal adenomas with or without symptoms of hyperthyroidism, except for a short period of time.

5. In adults who have simple large colloid-goiter or large colloid adenomatous goiter without fetal adenoma, iodine has remarkably beneficial results and may be tried but only with extreme caution. Such goiter may for a short time appear to be much improved, but may eventually culminate in hyperthyroidism

of a serious nature, with a basal metabolic rate of plus 75 to 100.

6. In exophthalmic goiter, in which operation is not to be done, iodine should be discontinued or greatly reduced when the metabolic rate is lowered. Continued use of iodine in these cases often overactivates the gland.

7. Iodine is most efficiently administered and controlled in the form of chocolate tablets containing 10 mg. of organic iodine or in the compound solution of iodine (Lugol). Both should be given under careful medical supervision.

Kimball says that in all cases of iodine treatment the doses should be given in terms of milligrams. The maximum dose for an adult, provided there are no contra-indications, should be 10 mg. daily for not longer than a month and then under close supervision.

Iodine in Diffuse Colloid Goiter

Following Plummer, one may say that diffuse colloid goiter, termed endemic or adolescent goiter in the United States, is observed in the last half of the second decade. Some of these colloids may go over into the succeeding decade, retaining more than normal colloidial substance. The diffuse colloid goiter with adenoma, with lateral lobes, says Plummer, more than 6 cm. in diameter are relatively rare in this country. The basal metabolic rate is within or below normal rates. In thyroids with 6 cm. of diameter, when compressed, the basal metabolic rate ranges from 8 to 18 per cent below normal. Bruit and thrill are present as a rule. Iodine is the sheet anchor in treatment of this form of goiter, if properly controlled.

Iodine in Adenomatous Goiter

Adenomas are fetal or adult. The majority of adenomatous goiters have their beginning in colloid goiter, according to Plummer. The embryonal cells seem to stimulate the gland to over-activity. These cases of nodular or adenomatous goiter are the ones to which iodine should not be given. Plummer has shown that adenomatous goiter with hyperthyroidism is a late stage of adenomatous goiter without hyperthyroidism.

Iodine in Exophthalmic Goiter

Boothby (Collected Papers of Mayo Clinic, 1924, page 121), in a well considered article on this subject, includes an illustrative case of iodine medication in adenomatous goiter which may be reported here for emphasis sake.

Case A-455636—A woman aged sixty-four years had worked very hard all her life and taken little care of herself. She had had a goiter for at least fifteen years, but it had never troubled until after a traveling salesman sold her some goiter medicine, which she had been taking for six months. Within two months she began to lose weight and strength. The symptoms had been marked for two months and cardiac trouble was evidenced by tachycardia, palpitation, dyspnea, and edema. The patient presented the typical symptoms of adenomatous goiter with hyperthyroidism. Both lobes and the isthmus of the thyroid were moderately enlarged and somewhat nodular; there were no thrills or bruit. There was no exophthalmus and the eyes did not stare. The patient was somewhat nervous, but did not have the typical mental restlessness so characteristic of exophthalmic goiter. Her heart was somewhat enlarged but without murmurs. The pulse rate on admission was 110, but dropped to 100 on the following day. The basal metabolic rate on the morning after admission was +53 and on the sixth day +39. Thyroidectomy was performed the day after the admission. The pathologic report was multiple, degenerative, fibrous, calcareous colloid and fetal adenomas weighing 162 gm. The post-operative period was without incident although the patient gained her strength somewhat slowly.

This case illustrates when iodine medication harms and becomes a medical tragedy. Boothby concludes in the following words:

1. Iodine medication administered to patients with adenomatous goiter without hyperthyroidism often indicates a syndrome comprehended in the term "adenomatous goiter with hyperthyroidism."

2. Iodine administered to patients woth exophthalmic goiter usually reduces the basal metabolic rate and practically always causes the typical and characteristic nervous and gastrointestinal symptoms to disappear.

3. Iodine when properly administered will prevent death from the acute post-operative exophthalmic goiter crisis.

4. Iodine with few exceptions should be advised only as a temporary therapeutic measure in the treatment of exophtahalmic goiter to bring the patient in a safe condition for partial thyroidectomy.

News Notes

The Virginia State Board of Medical Examiners

Held its regular semi-annual examinations in Richmond, June 16-19, inclusive, one hundred doctors applying for license to practice

in this State. Certificates were granted to 84 who took examinations and to 16 who applied through reciprocity, there being no failures. Of those licensed, 53 were graduates of the Medical College of Virginia and 28 of the University of Virginia, Medical Department.

The secretary-treasurer, Dr. J. W. Preston, Roanoke, announces that an examination of their records shows that more certificates were issued following this meeting than at any time since 1916, which would seem to indicate that either more men are now interested in the study of medicine, or that more are now finding the means of meeting the expenses incident to the study of medicine.

Following is an alphabetical list of those licensed through examination:

Dr. Haddon C. Alexander, Jr., Tunstall, Va.
Dr. Fletcher E. Ammons, Hampton, Va.
Dr. Guy C. Amory, Grafton, Va.
Dr. Lewis W. Angle, Richmond, Va.
Dr. Benjamin H. Bailey, Richmond, Va.
Dr. J. Reginald Bailey, Keysville, Va.
Dr. Webster P. Barnes, Richmond, Va.
Dr. F. Clyde Bedsoul, Richmond, Va.
Dr. Edward L. Boone, Rich Square, N. C.
Dr. Richard A. Bowen, II, Richmond, Va.
Dr. Bruce E. Bradley, Boston, Mass.
Dr. William T. Burch, Richmond, Va.
Dr. Orman C. Campbell, Princeton, W. Va.
Dr. Joseph Caplan, Baltimore, Md.
Dr. James Scott Chalmers, University, Va.
Dr. John H. Childrey, Rochester, N. Y.
Dr. George G. Chiles, Strasburg, Va.
Dr. Louis T. Claytor, University, Va.
Dr. Harvie D. Coghill, Richmond, Va.
Dr. John M. Crymes, South Hill, Va.
Dr. Gilbert Daniel, Petersburg, Va.
Dr. Andrew S. Davis, Chincoteague Island, Va.
Dr. Frederick F. Davis, Roanoke, Va.
Dr. William M. Dick, Newport News, Va.
Dr. Richard B. Easley, Richmond, Va.
Dr. James F. Folk, Richmond, Va.
Dr. Harry Goldstein, Richmond, Va.
Dr. Francis C. Goodwin, University, Va.
Dr. James B. Gordon, Richmond, Va.
Dr. Roy A. Gregory, University, Va.
Dr. James R. Grinels, Grinels, Va.
Dr. Savala E. Gunn, Sutherlin, Va.
Dr. Taswell P. Haney, Jr., University, Va.
Dr. DeWitt Hamrick, University, Va.
Dr. Jacob C. Harshbarger, Port Republic, Va.
Dr. Gordon L. Hastings, Richmond, Va.
Dr. Edward C. Held, Richmond, Va.
Dr. Lonnie M. Hines, Abingdon, Va.
Dr. Abraham J. Hollander, Richmond, Va.
Dr. Frank R. Hopkins, Hot Springs, Va.
Dr. Charles J. Horgan, Washington, D. C.
Dr. Algernon S. Hurt, Jr., Richmond, Va.
Dr. James P. Jones, Jr., Richmond, Va.
Dr. Aaron A. Karan, Brooklyn, N. Y.
Dr. Lawrence B. Kelleher, Norfolk, Va.
Dr. Lewis A. Law, Abingdon, Va.
Dr. Thomas L. Lee, Richmond, Va.
Dr. Charles D. Lucas, University, Va.
Dr. Lewis C. Lush, Richmond, Va.
Dr. Helen Magly, Cincinnati, O.
Dr. Edward C. Maphis, Richmond, Va.
Dr. John J. McDonald, Richmond, Va.
Dr. Maurice J. Miller, Norfolk, Va.
Dr. Walton F. Mitchell, Stewartsville, Va.
Dr. William R. Morton, Richmond, Va.
Dr. Daniel O. Nichols, University, Va.
Dr. R. Angus Nichols, Jr., Richmond, Va.
Dr. Charles H. Peterson, University, Va.
Dr. William O. Porter, Roanoke, Va.
Dr. Bruce L. Randolph, Richmond, Va.
Dr. Maurice Rosenthal, Richmond, Va.
Dr. Willcox Ruffin, University, Va.
Dr. Sam B. Scott, University, Va.
Dr. Marion H. Seawell, Richmond, Va.
Dr. Cornelia W. Segar, Burkeville, Va.
Dr. James Asa Shield, Richmond, Va.
Dr. Thomas J. Sims, Jr., University, Va.
Dr. Jack Smiley, Salem, Va.
Dr. Albert M. Smith, University, Va.
Dr. James B. Smith, Jr., Sharps, Va.
Dr. William G. Smith, Raleigh, N. C.
Dr. Aaron B. Spahr, Benhams, Va.
Dr. George G. Stone, Wytheville, Va.
Dr. Oscar Swineford, Jr., Richmond, Va.
Dr. Henry L. Townsend, Richmond, Va.
Dr. Clarence W. Trexler, University, Va.
Dr. Theodore M. Trousdale, Rome, Pa.
Dr. Louis Wachtel, Richmond, Va.
Dr. Harry Walker, Richmond, Va.
Dr. Charles J. Waller, Catlett, Va.
Dr. Frank B. West, Alexandria, Va.
Dr. James E. Wheeler, University, Va.
Dr. Louis L. Wilkinson, University, Va.
Dr. Burbridge S. Yancey, University, Va.

The list of those licensed by recriprocity is as follows:

Dr. Ernest E. Anderson, Bluefield, W. Va.
Dr. Harry W. Bachman, Bristol, Va.
Dr. Horace B. Dean, Roanoke, Va.
Dr. William F. Dobyns, Augusta, Va.
Dr. Floyd L. Echols, Seven Mile Ford, Va.
Dr. William E. Fitch, Mt. Vernon, N. Y.
Dr. Stuart O. Foster, Roanoke, Va.
Dr. Stellman G. Gibbs, St. Albans, W. Va.
Dr. John E. Habbe, Norfolk, Va.
Dr. Regina C. Johnson, Richmond, Va.
Dr. Arthur D. Knott, Richmond, Va.
Dr. Ira C. Long, Radford, Va.
Dr. William Siegal, Norfolk, Va.
Dr. Harry S. Smythe, Mountain City, Tenn.
Dr. Harry Sutelan, Norfolk, Va.
Dr. Adam G. White, Lynchburg, Va.

Walter P. Bronston, Richmond, Va., was also licensed to practice chiropody upon the basis of reciprocity with Illinois.

The Norfolk Meeting, Medical Society of Virginia.

Only about two months remain before the annual meeting of the Medical Society of Virginia in Norfolk. Indications are that we will have a large attendance and a most interesting program. The Monticello Hotel will be headquarters for the meeting and it has been arranged to have the usual exhibits in addition to the reading and discussion of papers. Titles of papers by members will be received beginning August 12th. It is requested that each member presenting a paper arrange to have a member open discussion on his paper.

Entertainments, shopping and sight seeing will keep the ladies busy, so bring your wives and daughters.

Dr. W. L. Harris, Norfolk, is this year's president. Dr. Israel Brown, Medical Arts Building, Norfolk, is chairman of the Local Committee of Arrangements.

Local Societies should appoint delegates and alternates to the House of Delegates and send names of same to the Society's Offices, at 104½ West Grace Street, Richmond.

The Doctor's Playtime.

Doctors so often fail to realize the truth of the old adage, "All work and no play makes Jack a dull boy" that we take the liberty of quoting from a very timely selection in *The Atlantic Medical Monthly* on this subject:

"As a class, doctors do not play enough. Their hours are long, their work depressing, and their opportunity for recreation scant. Their leisure time is apt to be devoted to medical meetings, perusal of medical literature, or study of one kind or another. Their friendships are largely among men of their own profession—when, indeed, they have time to give to friends—and all their activities center around their work.

"Yet it must not be forgotten that every man needs recreation and rest if he is to remain healthy and preserve a sane attitude of mind. That 'tired feeling' is more apt to come from 'staleness' than from overactivity. Among no other class of professional people is a rested body and a clear mind more essential than with the men on whom other folk's lives so often depend. The doctor owes it not only to himself and to his family, but to his patients to care for his own well-being.

"A hobby totally removed from the world of medicine is a most excellent thing for any physician to develop. In Paris recently the 'Salon des Medecins' presented examples of paintings and sculpture executed by physicians. It was a good idea, and one worth developing in this country. Other men find their outlet in church work, clubs, golf, gardening, and varied activities. It matters not so much what vent the play instinct may have, it is the having *something* outside the regular routine to occupy the leisure hours pleasurably that is necessary to a well balanced and normal life.

"The physician is about the only professional man who is on call all the time, day and night, and in this period when the eight-hour day has been recognized as practically standard for the laborer, it would appear justifiable for doctors to consider some plan that will give them certain hours for their own without fear of being disturbed. This has been one of the strong appeals of the specialties, for the specialist can regulate his hours of work better than can the general practitioner. It is also one of the strongest arguments in favor of group medicine. The members of a clinic can take their turn attending to the night work, so that all will have some opportunity to devote to their physical and spiritual betterment—in other words, to play."

Many Virginia Doctors on Vacation.

Dr. and Mrs. Allen Perkins and children,

of Norfolk, have been visiting friends near West Point, Va.

Dr. and Mrs. Stuart McGuire, Richmond, sailed from New York, July 31st, and will spend several weeks motoring through England and Scotland.

Dr. George B. Lawson and family, of Roanoke, spent part of their vacation at Cape Hatteras, N. C.

Dr. and Mrs. Wyndham Blanton, Richmond, sailed the latter part of July for a visit of six weeks in Europe.

Dr. and Mrs. Aaron Jeffery, of Newport News, have been visiting relatives in Richmond, Va.

Dr. and Mrs. J. Shelton Horsley, Richmond, who sailed in June for a European tour, are expected to land in New York on August the 16th. While traveling in Europe, Dr. Horsley has visited several of the foreign clinics, including those of the English workers, Gye and Barnard, and Blair Bell, all of whom have done recent and most interesting researches in the cause and treatment of cancer.

Dr. and Mrs. J. W. Tipton have just returned to their home in Danville, Va., after a visit to New York.

Dr. and Mrs. Albert E. Wilson and Albert E. Wilson, Jr., of Norfolk, are spending their vacation visiting Mrs. Wilson's brother-in-law and sister, Dr. and Mrs. Robert F. Hardesty, in Reisterstown Road, Baltimore, Md.

Dr. and Mrs. E. H. Terrell, Richmond, left the first of this month for a motor trip through the mountains of western North Carolina.

Dr. and Mrs. G. G. Crawford and daughter returned to their home at Strasburg, Va., the latter part of July, after a visit to relatives in Hanover County, Va.

Dr. and Mrs. T. Allen Kirk, of Roanoke, have been enjoying a vacation with relatives in Maryland.

Dr. and Mrs. Henry A. Bullock have returned to their home in Richmond, after a visit to friends in Evanston, Ill., and South Bend, Ind.

Dr. and Mrs. I. Keith Briggs, South Boston, spent sometime in July on a vacation near Asheville, N. C.

Dr. J. E. Rawls, Suffolk, Va., returned home the last of July, after attending clinics in a number of European countries. After most of the party sailed for the States, Dr. Rawls took an extension trip to the British Isles.

Dr. James W. Reed returned home and resumed his practice in Norfolk, about the middle of July, after attending a number of clinics on Continental Europe. He and Dr. Rawls were members of the Interstate European Assemblies of 1926, which attended clinics in eight foreign countries.

Dr. J. A. Tyree and family have returned to their home in Danville, Va., after a visit to Remington, Va.

Dr. and Mrs. H. Stuart MacLean and daughter, of Richmond, have been spending several weeks touring through the far West during which time they have visited many points of interest, especially in California and Colorado.

Dr. and Mrs. C. B. Fox and children, of Monterey, have been enjoying a visit in Rockingham and Albemarle Counties, Virginia.

Dr. and Mrs. Ennion G. Williams, Richmond, have been spending a vacation at Woodberry Forest, Va.

Dr. and Mrs. A. M. Saunders, Norfolk, have been visiting in Buckingham County.

Dr. Clyde Bailey has returned to his home in Danville, after a visit to Virginia Beach, Va.

Dr. and Mrs. W. Lowndes Peple, Richmond, spent their usual summer vacation at Nimrod Hall, Va.

Dr. A. M. Showalter returned to his home at Cambria, Va., the latter part of July, after a short visit to Covington, Va.

Dr. J. L. Wright, Harrisonburg, has been on a visit to Canada.

Dr. M. E. Hundley, Martinsville, has returned home after a trip with the Interstate European Assemblies, which attended clinics in a number of European countries.

Dr. W. B. Porter, Roanoke, spent his vacation at Wrightsville Beach, N. C.

Dr. and Mrs. John Tipton, Keysville, are home again after a visit to relatives in Pulaski and Wytheville, Va.

Dr. and Mrs. O. H. Whitlock and son, of Tobaccoville, Va., have been spending sometime at Virginia Beach, Va.

Dr. and Mrs. St. George Grinnan returned to their home in Richmond, the latter part of July, after a visit to Woodberry Forest, Va.,

where they went to attend the marriage of Dr. Grinnan's niece.

Dr. and Mrs. W. J. Wigington are home again at Java, Va., after a visit to relatives near Rocky Mount, Va.

Dr. and Mrs. Charles R. Robins, who spent several weeks in Europe, returned to Richmond, the latter part of July.

Dr. S. P. Gardner, Arno, Va., spent his vacation visiting in Kentucky and Indiana.

Dr. and Mrs. R. Finley Gayle, Richmond, spent a vacation in July visiting Dr. Gayle's parents in Lawrenceville, Va.

Dr. R. H. Fuller, Clover, Va., was a recent visitor in Richmond.

Dr. and Mrs. S. T. Yeatts, of Floyd, recently took a motor trip through Tennessee, Mississippi and Louisiana and visited Mrs. Yeatts' parents while away.

Dr. and Mrs. W. Wallace Gill are home again in Richmond after spending a month on the coast of Maine.

Dr. Edward B. Broocks, an alumnus of the University of Virginia and now a resident of Washington, D. C., recently visited his parents at Chase City, Va.

Dr. and Mrs. F. W. Upshur, Richmond, recently visited their brother, Lt. Col. W. P. Upshur, at Quantico, and later left for an automobile trip to Connecticut. They will return by way of White Sulphur Springs, W. Va., reaching home early in September.

Dr. C. M. Miller, Richmond, has been spending some time with his family in their cottage at Old Sweet Springs.

Dr. and Mrs. R. A. Vonderlehr, formerly of Richmond, have been visiting relatives in Chesterfield County, Va. Dr. Vonderlehr is now located at U. S. Marine Hospital No. 43. Ellis Island, N. Y., one of the immigration hospitals of the U. S. Public Health Service.

Dr. and Mrs. Dickinson Celebrate Golden Wedding.

Dr. and Mrs. S. W. Dickinson, of Marion, Va., celebrated the fiftieth anniversary of their wedding on July 12, all of their children and grandchildren being with them for the occasion. Many friends and relatives called during the day to extend congratulations and a number of telegrams, messages and remembrances were received. Dr. Dickinson has practiced medicine in Marion for forty-five years in all of which time he has taken an interest in the activities of his section.

Dr. Edmund Horgan,

Washington, D. C., a member of the Medical Society of Virginia, leaves for Europe the latter part of August and will return home about the middle of October.

The Tazewell County Medical Society

Held its regular meeting in Richlands, Va., July 22, the new president, Dr. J. W. Shawver, of that place, presiding. Dr. Isaac Peirce, Tazewell, is secretary of the Society. Dr. F. H. Smith, Abingdon, and Dr. C. B. Bowyer, Stonega, councilors, and the secretary of the State Society were in attendance. It was decided that doctors living in Tazewell and other counties in the Clinch River Valley should be invited to meet with the Wise County Medical Society in September, at which time there will be a discussion as to whether it will be for the best purposes of the counties to maintain individual county units or form a district medical society.

Proposed Constitution and By-Laws.

At the last meeting of the Medical Society of Virginia, the House of Delegates adopted a resolution that the Executive Council appoint a committee to examine carefully the Constitution and By-Laws of the Society and make such revisions as it deemed wise. At the midwinter session of the Council, a Committee composed of Drs. E. L. Kendig, chairman, F. H. Smith and Charles R. Grandy was appointed and promptly got to work. The proposed Constitution and By-Laws arranged by this Committee appears in the present issue of the Journal, beginning on page 327.

It is requested that each member of the Society read this draft carefully, that the various articles and sections be freely discussed in County society meetings, and that delegates and alternates be instructed to present views of their respective societies at the Norfolk meeting.

The American Society for the Control of Cancer

Will hold its regular meeting September 20-24, at the Lake Mohonk Mountain House, Lake Mohonk, New York. An interesting program has been prepared for this occasion.

Dr. R. L. Mason,

Of Roanoke, Va., was called to Bridgewater,

Va., July 20th, by the sudden death of his father, Mr. R. J. Mason. Mr. Mason was a Confederate Veteran, having served during the Civil War in the President's Guard and Otey's Battery. He was in his eighty-fifth year.

The American Ophthalmological Association,

At its recent meeting, elected Dr. William Zentmayer, of Philadelphia, president, and Dr. Emory Hill, Richmond, Va., secretary. The next meeting will be held in Quebec, Canada.

Dr. Jacob S. Rosenthal,

Formerly of Norfolk, Va., is now in New York City where he expects to remain a year or more studying and investigating many subjects that affect the medical profession as a whole.

Married.

Dr. Hugh Trout, Roanoke, Va., and Miss Alice Green, Hollins, Va., early in June.

Dr. Neilson Hampden Turner and Miss Virginia Payne Hening, both of Richmond, June 12.

Dr. A. Burleigh Spahr, of Benhams, Va., and Miss Annie Bell Butcher, of Richmond, June 12.

Dr. R. S. Kyle and Miss Vera Hampton, of Galax, Va., early in June.

Dr. Louis Lee Wilkinson, of this year's class, University of Virginia Medical Department, and Miss Cosie Byrd Wyndham, Berryville, Va., a graduate nurse of the University Hospital, in Washington, D. C., early in July. They will sail July 27 for Soochow, China, where they will be connected with the Wilkinson Hospital, established there some years ago by Dr. Wilkinson's father.

Dr. B. B. Bagby to Leave Richmond.

It is with regret that the citizens of Richmond, Va., have learned of the resignation of Dr. Bathurst B. Bagby as chief medical inspector of the Bureau of Health of the Department of Public Welfare, of this city. Dr. Bagby has filled the above named position most acceptably for the past two years, having previously served for sometime as health officer of Henrico County. He leaves Richmond to become health officer of the City of Athens and Clarke County. Georgia, and will enter upon his new duties on September 1st. Some of the first work to be undertaken by Dr. Bagby in his new field is to represent Clarke County, Georgia, in a health demonstration which is to be put on in that County in conjunction with the Commonwealth Fund of New York.

Dr. Robert Whitehead,

Recently of Victoria, Va., has moved to Richmond, Va., where he is associated in practice with Dr. Thomas W. Murrell, at 17 East Grace Street.

Dr. Wesley Williams

Has returned to Norfolk, Va., after an absence of some months, and has resumed his practice, his home being at 521 Pennsylvania Avenue.

Dr. Kitchin Remains Dean at Wake Forest Medical College.

We are advised that Dr. T. D. Kitchin, who recently resigned his connection with Wake Forest Medical College, North Carolina, to resume private work, has withdrawn his resignation, and will remain dean of the School.

Dr. Theodore M. Trousdale,

Of Johns Hopkins University, of the class of '25, after the past year spent in Baltimore, will locate in Richlands, Va., the middle of August, where he will be engaged in private practice.

Dr. H. Aulick Burke,

For some time of Petersburg, Va., has located in Columbus, Ga., where he is specializing in surgery.

Dr. Blanton L. Hillsman,

Richmond, has been appointed chief surgeon of the Virginia National Guard, succeeding Dr. Wm. Russell Jones, Richmond, resigned.

Dr. Haynes Hurt in Auto Accident.

Dr. I. J. Haynes, well known travelling representative of W. B. Saunders Company, Philadelphia, suffered some painful bruises and cuts about his head and body, July 27th, when his car was struck by another automobile in Kimball, W. Va. He has been recuperating at his home in Florida.

Dr. William M. Junkin,

Of the class of '25, Medical College of Virginia, after a year's service at St. Luke's Hospital, Richmond, Va., has located in Welch,

W. Va., where he is associated with Drs. Hall and Daniel.

Dr. Stuart O. Foster,

Of the class of '24. Yale University School of Medicine, after an internship at the Fifth Avenue Hospital, New York City, has located in Roanoke, Va., with offices in the American National Bank Building.

Dr. T. Duckett Jones,

Who has just completed a service at the Massachusetts General Hospital, Boston, is visiting for a few weeks in Northern Michigan before returning to Virginia.

American Board of Otolaryngology.

The next examination given by this Board will be held in Denver, Colorado, at the University Hospital, on Monday, September 13, 1926. Application should be made to the Secretary, Dr. H. W. Loeb, 1402 South Grand Boulevard, St. Louis, Missouri.

Dr. W. Ambrose McGee,

After a year at Bellevue Hospital, New York, has returned to Richmond and has offices at 2618 Grove Avenue. He will limit his work to diseases of infants and children. Dr. McGee was graduated from Medical College of Virginia in 1924 and served an internship at St. Elizabeth's Hospital, Richmond, before going to New York.

Dr. Claude Moore,

Of Roanoke, Va., recently underwent an operation for appendicitis at Lewis-Gale Hospital, Roanoke.

Children's Clinic at Norfolk, Va.

More than 800 babies under 18 months are under supervision of the Children's Clinic at Norfolk, which in twelve years has developed from an outgrowth of the visiting nurse service of the King's Daughters into an organization housed through the generosity of the local Kiwanis Club in a modern 3-story building and maintaining a staff of 20 visiting physicians, 4 nurses, a social service worker, a dentist, and other special workers who give occasional service. Clinic sessions are held three times a week.

Dr. Allen Moore,

Formerly of New Market, Va., but recently of Doylestown, Pa., has been spending sometime in Boston, Mass., where he received an appointment for the month of July with Dr. Maynard Ladd, associate in pediatrics at Harvard University. Dr. Moore was assigned work at the Boston Dispensary Children's Hospital and Health Clinics of neighboring cities.

Dr. Moore was also recently appointed a consultant for the Bell Telephone Company of Pennsylvania.

Dr. J. L. Blanton,

Fieldale, Va., of the class of '24, Medical College of Virginia, recently underwent an operation for appendicitis in Martinsville, Va.

Dr. Edward Held,

Richmond, of the class of '26, Johns Hopkins University, entered the Polyclinic Hospital, New York City, August 1st, for a two years' internship in surgery.

Government Warns Public Against Fraudulent Radioactive Waters and Drugs.

The alleged medicinal efficacy of slightly radioactive waters and other slightly radioactive preparations has been found to be much misrepresented, say officials of the Bureau of Chemistry of the U. S. Department of Agriculture, who, in the enforcement of the Federal Food and Drugs Act, have made a nationwide survey of waters and drugs alleged to be radioactive. Only 5 per cent of the products analyzed and claimed to be radioactive contained radium in sufficient quantities to render them entitled to consideration as therapeutic agents and then only in certain very limited conditions, say the officials. Highly exaggerated therapeutic claims obviously designed to mislead the purchaser are being made for many of the products which contain little or no radium.

Action will be taken under the Federal Food and Drugs Act against shipments of the alleged radioactive products which are falsely or fraudulently misbranded under the terms of the Federal Food and Drugs Act. A warning regarding the indiscriminate use of those few products which are highly radioactive is also sounded by the officials, as "The distribution to the general public without discrimination or adequate supervision of highly radioactive products or the devices for rendering water or other substances highly radioactive is of very questionable propriety since radium in active dosage is potent for harm as well as for good and should be administered with great caution."

Dr. Rees Morgan,

Who has just completed a two years' internship at the University of Virginia Hospital, for the last thirteen months of which he was resident on obstetrics and gyencology, left the first of August for New Orleans, La. He will be at the Touro Infirmary and will take a two years' fellowship in the same specialties at Tulane University.

Dr. J. S. Horsley, Jr.,

Who has been assistant attending surgeon for the past three years at St. Elizabeth's Hospital, Richmond, has been placed in charge of the department of plastic and thoracic surgery at that hospital and is also an associate in general surgery.

Doctors Receive Military Training.

Virginia doctors and those from nearby states listed as attending the Officers' Reserve Corps, Medical Department, at Carlisle Barracks, Pa., from July 4th to 18th, inclusive, were:

Colonels W. M. Phelps, Staunton, Va., Thos. Foley, Washington, D. C., J. W. McConnell, Davidson, N. C., and M. L. Townsend, Raleigh N. C.

Lieutenant Colonels Dunlap P. Penhollow, D. D. Stuart, Daniel S. Hatfield, and O. D. Wescott, Washington, D. C., Walter E. Vest, Huntington, W. Va.

Majors C. P. Obenschain, New Hope, Va., W. A. Brumfield, Blacksburg, Va., H. L. Freeland, Charles M. Edwards, and J. A. Rollings, Richmond, Va., Chas. F. Dodd, Alexandria, Va.; C. B. Conklin, George B. Jenkins, and J. P. Madigan, Washington, D. C.; Ross M. Miner and Hugh G. Nicholson, Charleston, W. Va.

Captains T. Latane Driscoll, Richmond, Va., G. A. L. Kolmer, Salem, Va., and Everett M. Ellison and R. J. Haws, Washington, D. C.

Dr. R. D. Campbell,

Of the class of '25, Medical College of Virginia, having completed an internship at George Ben Johnston Memorial Hospital, Abingdon, Va., has located at Broadford, Va., for the practice of medicine.

Dr. H. J. Warthen, Jr.,

Of the class of '25, University of Virginia, Medical Department, upon completing his year of service as intern at St. Elizabeth's Hospital, Richmond, spent July studying at the Mayo Clinic in Rochester, Minn. While away, he also visited Dr. Crile's Clinic and new hospital and other clinics in Cleveland. On his return to Richmond, the first of this month, he again entered St. Elizabeth's Hospital, where he has been appointed research fellow and an assistant in the department of general surgery and gynecology.

The Inter-State Post-Graduate Assembly of North America

Is to be held at Cleveland, Ohio, October 15th to 22nd, inclusive, with hotel headquarters at Hotel Cleveland. General headquarters for all scientific sessions and exhibits will be at the Municipal Auditorium. The discussions and clinics will be on a variety of interesting subjects. The Program Committee is composed of Dr. George W. Crile, Cleveland, chairman, and Drs. Lewellys F. Barker, Baltimore, George E. Brewer, New York City, Henry A. Christian, Boston, John B. Deaver, Philadelphia, Duncan A. L. Graham, Toronto, James B. Herrick, Chicago, and Jonathan C. Meakins, Montreal. Dr. Wm. B. Peck, Freeport, Ill., managing director, will gladly furnish any desired information.

American Therapeutic Society.

At the annual meeting of this Society in Philadelphia, in June, under the presidency of Dr. Lewis H. Taylor, of Washington, D. C., Dr. Wm. A. Campbell, of Colorado Springs, Col., was elected president, and Dr. Wm. J. Mallory, Washington, D. C., secretary. The next annual meeting is to be held in Washington, D. C.

The Medical Society of the State of North Carolina.

At its annual meeting in June, at Wrightsville Beach, elected Dr. John Q. Myers, Charlotte, president, Drs. J. W. Carroll, Wallace. A. Y. Linville, Winston-Salem, and Charles H. Coke, Asheville, vice-presidents, and reelected Dr. L. B. McBrayer, Southern Pines, secretary-treasurer. Durham was selected as the place of meeting in the Spring of 1927.

The American Electrotherapeutic Association

Will hold its annual meeting at Atlantic City, September 8-11, with headquarters at Hotel Ambassador. Dr. Victor C. Pedersen, of New York City, is president.

Civil Service Examinations.

The U. S. Civil Service Commission, Washington, D. C., announces open competitive examinations for:

Medical Officers to fill vacancies in the Indian Service, the Public Health Service, the Coast and Geodetic Survey, the Panama Canal Service, the Veterans' Bureau, and other branches, applications to be rated as received until December 30;

Physiotherapy Aide and Physiotherapy Assistant, applications to be on file not later than October 9, or November 27:

Occupational therapy aide and occupational therapy pupil aide (arts and crafts), occupational therapy aide (trades and industrial), and occupational therapy aide (agriculture), applications to be rated as received at Washington, D. C., until December 30;

Social worker (psychiatric), applications to be on file at Washington, D. C., not later than September 21:

Graduate Nurse and Graduate Nurse (Visiting Duty), applications to be rated as received until December 30.

Full information and application blanks may be obtained from above named Service, or the secretary of the Board of U. S. Civil Service Examiners at the postoffice or customhouse in any city.

Obituary

Dr. Ludwig Mendelsohn,

For nearly twenty-five years a practicing physician of Norfolk, Va., died at his home in that place, the latter part of July, after having been in bad health for several months. He was a native of Germany and about fifty-three years of age. He studied medicine in Germany, later coming to this country. He was a Mason and a member of a number of fraternal organizations, his local and State medical societies and the American Medical Association. He was also a member of the staff of St. Vincent's Hospital, Norfolk. He is survived by his wife and a large family connection.

The Norfolk County Medical Society, at a called meeting on July 20th, adopted the following resolutions on the death of Dr. Mendelsohn:

WHEREAS, God, in His infinite wisdom, has called our beloved colleague, Dr. Ludwig Mendelsohn, to his reward; therefore be it

RESOLVED, That in the death of Dr. Mendelsohn the Norfolk County Medical Society has lost a valuable member, a physician who upheld the best traditions of our calling in skill, charity and love for mankind. His high character, gentle courtesy, and profound sense of honor, endeared him to the community. A God-fearing gentleman and physician has passed.

That a page be set aside in the minute book of this society dedicated to his memory;

That a copy of these resolutions be sent to his family with our sincerest sympathy;

That these resolutions be published in the Norfolk daily papers, and the Virginia Medical Monthly.

ISRAEL BROWN,
STARK A. SUTTON,
LEVI OLD,
EDWARD T. HARGRAVE,
Committee.

Dr. John Wesley Long,

One of the best known surgeons in North Carolina, died August 1st, at his home in Greensboro, of heart disease. Dr. Long was sixty-seven years of age and a graduate in medicine from Vanderbilt University, Nashville, Tenn., in 1884. During the World War, Dr. Long volunteered and saw active service in France. For a short time, Dr. Long made his home in Richmond, where he was connected with the faculty of the Medical College of Virginia, and at the time of his death, was Emeritus Professor of Diseases of Women and Children at this College. His funeral was held with military honors.

Dr. Burnley Lankford.

As we go to press, we learn with regret of the death by drowning of Dr. Burnley Lankford, well know obstetrician of Norfolk, Va. The accident occurred on the afternoon of August 3rd, in front of Dr. Lankford's cottage at Cape Henry. In an effort to save the life of a young nephew, Dr. Lankford strangled and apparently lost consciousness. His young daughter attempted to save him and had gotten him almost to shallow water when a high wave broke her hold on her father and carried his body out to sea. The body was recovered the next day.

Dr. Lankford was forty-six years of age and an alumnus of the University of Richmond. During his career here he starred as a football player. Upon completion of his academic education he studied medicine at the University of Virginia, graduating in 1903. He was a member of his local and a number of national medical societies and was also prominent in the social life of Norfolk. He was the son of the late Dr. Livius Lankford, of Norfolk. Dr. Lankford's wife and two daughters survive him.

INSULIN · LILLY

TWO NAMES ALWAYS ASSOCIATED

In the minds of diabetic specialists in the United States, the name Insulin is very closely associated with the name Lilly.

In May, 1922, The Lilly Research Laboratories began co-operating with The Insulin Committee of the University of Toronto in the development of a process for the manufacture on a large scale of a pure, stable, uniform, high-grade preparation of Insulin. ¶ Within a few months several thousands of the clinicians in this country were receiving from the Lilly Laboratories ample supplies of Insulin for experimental work.

ILETIN (INSULIN, LILLY)

Iletin (Insulin, Lilly) was the first preparation of Insulin commercially available in the United States.

The name Lilly on pharmaceutical and biological preparations inspires confidence because for fifty years it has stood for scientific products, ethically advertised and economically distributed.

Iletin (Insulin, Lilly) is supplied in 5 cc. and 10 cc. vials, U-10, U-20 and U-40.

All Lilly Products are distributed through the drug trade

ELI LILLY AND COMPANY

INDIANAPOLIS, U. S. A.

Capital $1,000,000 Surplus Earned $1,500,000

ESTABLISHED 1892

To act as Executor, Guardian and Trustee

$30,000,000

of investments held in Trust

Confidential Interviews Invited.

NEW YORK EYE AND EAR INFIRMARY

2nd Ave., Corner 13th Street, New York, N. Y.

SPECIAL COURSES OF POST GRADUATE INSTRUCTION IN

Operative Surgery of the Eye and Ear
Refraction
Muscle Anomalies
Ophthalmoscopy
Anatomy of the Ear
External Eye Diseases
Functional Testing of the Eye
Minor Otology
Histology

Address WEBB W. WEEKS, M. D., *Secretary.*

THE NEW YORK POLYCLINIC MEDICAL SCHOOL AND HOSPITAL

(Organized 1881)

(The Pioneer Post-Graduate Medical Institution in America)

We Announce

For the General Practitioner

A Combined Course
comprising

INTERNAL MEDICINE
PEDICTRICS
GASTRO-ENTEROLOGY
DERMATOLOGY
NEUROLOGY
OBSTETRICS
SURGERY
GYNECOLOGY (Surgical-Medical)
UROLOGY
PROCTOLOGY
ORTHOPEDIC SURGERY
TRAUMATIC SURGERY
OPHTHALMOLOGY
OTOLOGY
RHINO-LARYNGOLOGY

For Information Address

EXECUTIVE OFFICER, 345 West 50th Street, New York City

THE N. Y. ACADEMY OF MEDICINE
SEP 15 1926
LIBRARY

Virginia Medical Monthly

OFFICIAL ORGAN OF THE MEDICAL SOCIETY OF VIRGINIA

Vol. 53, No. 6.
WHOLE No. 891.

RICHMOND, VA., SEPTEMBER, 1926

$2.00 A YEAR
20 CENTS A COPY

CONTENTS.

ORIGINAL COMMUNICATIONS:
Theories Underlying the Treatment of Malignancy as Applied to Gynecology. Charles R. Robins, M. D., Richmond, Va. 347
Etiology of Appendicitis—All Forms. E. L. Lawrence, M. D., Roanoke, Va. 349
Pre- and Post-Operative Medical Treatment of Appendicitis. J. D. Willis, M. D., Roanoke, Va. 350
Surgical Treatment of Appendicitis. Nat H. Copenhaver, M. D., F. A. C. S., Bristol, Tenn.-Va. 351
Carcinoma of the Pancreas. Wm. H. Higgins. M. D., Richmond, Va. 355
Common Eye Conditions Seen by the General Practitioner. Charles A. Young. M. D., Roanoke, Va. 357
Bacillary Dysentery—Report of A Case. O. O. Ashworth, M. D., and R. W. Upchurch, M. D., Richmond, Va. 359
The Frequency and Symptoms of Prolonged Retained Placenta. M. Pierce Rucker, M. D., Richmond, Va. 362
Clinical Diagnosis of Duodeno—Pyloric Ulcers. W. W. Insley, M. D., Christiansburg, Va. 367
Some Points of Relationship Between the Orthodontist and Otorhinologist. W. Broaddus Massey, D. D. S., Richmond, Va. 368
Dystrophy of the Endocrine Glands in Relation to the Eyes. Robert Scott Lamb, M. D., Washington, D. C. 370
Feeding the Normal Infant the First Year. Thomas D. Jones, M. D., Richmond, Va. 372
Non-Operative Treatment of Chronic Otitis Media Suppurative. James R. Gorman, M. D., Lynchburg, Va. 378
The Use of Alcohol in Medicine. Charles Willcox, M. D., Washington, D. C. 382
Why Standardize the Hospital? P. W. Boyd, M. D., Winchester, Va. 387
Sudden Death. Wyndham B. Blanton, M. D., Richmond, Va. 390
Mercurial Poisoning From Local Applications of Mercurial Ointment.—Report of Case. Charles H. Lupton, M. D., Norfolk, Va. 395
The Nasal Accessory Sinuses. G. M. Maxwell, M. D., Roanoke, Va. 396
MISCELLANEOUS 398
CORRESPONDENCE 402
THE COUNTY SOCIETY 403
WOMAN'S AUXILIARY 404
THE TRUTH ABOUT MEDICINE 404
BOOK ANNOUNCEMENTS 407
EDITORIAL 409
NEWS NOTES 411
OBITUARY 417
INDEX OF ADVERTISERS—Advertising Page 5.

Calcreose

FOR BRONCHITIS AND TUBERCULOSIS

Calcreose is particularly valuable in the stubborn bronchial coughs that frequently follow the colds of early Fall.

By loosely combining creosote with hydrated calcium oxide in the form of Calcreose it is possible to secure the benefits of relatively large doses of creosote with little or no gastric distress.

Calcreose represents about 50% creosote in tablet form. It is easily administered and is particularly suitable as an adjunct to other remedial measures.

Powder : Tablets : Solution

Samples of Tablets on Request

THE MALTBIE CHEMICAL COMPANY

NEWARK, N. J. ; *Manufacturers of Pharmaceutical Products*

Complete Catalogue on Request

INFANT DIET MEAD'S MATERIALS

What is Mead's Standardized Cod Liver Oil?

Mead's Standardized Cod Liver Oil is accepted as a criterion of excellence not only by physicians, but also by other pharmaceutical manufacturers. *It is an established measure of quality regulated by a standard.*

Mead's is the first commercial oil tested to a standard of antirachitic potency. This standard was established after four years of investigation and testing of cod liver oils secured at the site of production in different countries of the world. Biological assay proved the *Newfoundland* oils to be most uniform in the active principle—the antirachitic factor or Vitamin D. Smaller doses of Newfoundland oil healed experimental rickets in animals in a shorter period of time than oils from other countries. Newfoundland oils also produced more prompt clinical evidence of healing of rickets in bones of infants as seen by the radiograph.

Standardization of Mead's oil means:

The ownership of forty rendering plants in Newfoundland.

The rendering of oil from *strictly fresh cod livers* within four hours after the fish are caught.

A standard, uniform method of rendering each batch of oil.

The careful removal of stearine—the non-antirachitic factor.

The numbering, registering, and biological assay of each batch of oil.

The selection for the physician of batches of oil that meet the standard for biological assay, and the disposal of oil under the standard to tanneries and soap manufacturers.

That the standard oils must show definite healing in severe rickets in experimental animals in five days when one part oil to 400 parts diet is fed to the rat. Some of our oils test even higher than this.

Mead's Standardized Cod Liver Oil is a trustworthy product, and if given to infants during the first two years of life, will greatly reduce rickets. The physician is gratified with the results obtained, and protects the baby in his care when he specifies *Mead's.*

Samples and scientific literature sent cheerfully on request.

MEAD JOHNSON & COMPANY, Evansville, Indiana, U. S. A.

Manufacturers of Infant Diet Materials Exclusively

Virginia Medical Monthly

Official Organ of the Medical Society of Virginia

Vol. 53, No. 6.
WHOLE No. 891.

RICHMOND, VA., SEPTEMBER, 1926

20 CENTS A COPY
$2.00 A YEAR

Original Communications

THEORIES UNDERLYING THE TREATMENT OF MALIGNANCY AS APPLIED TO GYNECOLOGY.*

By CHARLES R. ROBINS, M. D., Richmond, Va.
Professor of Gynecology and Gynecologist to Hospital Division, Medical College of Virginia; Surgeon, Stuart Circle Hospital.

It is not the purpose of this paper to present any elaborate review of the subject of cancer, but in a brief way to state some conclusions at which I have arrived as a result of personal observation and experience.

A casual review of operations for cancer, particularly of the cervix, is interesting. I can remember when amputation of the cervix was seriously advised as a cure for cancer. It is doubtful if any case of cancer was ever cured by this means. When the futility of this operation was appreciated, the tendency was to make the operation more and more extensive. Starting first with vaginal hysterectomy, abdominal hysterectomy became next the operation of choice, and this was followed by the elaborate dissection which bears the name of the originator, Wertheim. This last operation never, however, became popular, due partly to the primary mortality attending the operation but also to the intrinsic difficulty and tediousness of the operation itself. The results obtained, however, in those patients who survived the operation, undoubtedly were better than those obtained by the ordinary abdominal hysterectomy. But the number of recurrences following operation has always remained very high, so much so that surgeons of wide experience have challenged any one to produce a case that had been permanently cured of cancer of the cervix by operation. There have been, however, such cures and I can produce a few patients from my own records who have been operated over five years ago and are still living and in excellent health. These cases followed the Wertheim operation. The tendency to recurrence is, however, distressing, and by far the most common seat of recurrence is in the stump, that is to say a local recurrence. The reason for this is quite easily explained. In carcinoma of the cervix the extension is along the lymphatics which run through the base of the broad ligament. A contemplation of the anatomy at this point makes it quite obvious that it is impossible to make a wide excision unless the Wertheim operation is done. The extension in this region is early and any operation performed where the tissues are cut through close to the cervix, as is the usual technique, is more than liable to leave undetected cancer cells behind. This explains why it is that carcinoma of the fundus has given such excellent results from operative treatment, while in cancer of the cervix the results have been so discouraging. In the one case the distance and indirect connection with the lymph channels means safety, while in the other direct relationship and close anatomical connection is a source of danger that is very difficult to overcome.

As a matter of fact, operation for carcinoma of the cervix fell into grave disrepute, and other means were looked for in an attempt to substitute something better. Cauterization by heat was found to secure very excellent primary results, and this was particularly true with the use of the Percy cautery. I was very much encouraged by the results secured by this latter method, and it was quite remarkable to be able to treat a case with the Percy cautery and observe how the entire uterus would shrivel down to a fibrous cord without any apparent vestige of the malignant growth. However, I have never known of a case in my own experience where recurrence did not take place, usually after a period of about six months. With the advent of radiation, however, using this term to apply to radium and X-ray therapy, very much better results were secured. In fact, the results were so good that the question naturally arose as to whether or not operation was ever indicated. While I have personally seen remarkable results and am quite an enthusiastic believer in the virtues of radiation, I have to confess, after hav-

*Read before the South Piedmont Medical Society at Danville, Va., April 20, 1926.

ing secured most remarkable primary results, that the cases of recurrence or recrudescence are disconcertingly large. We must not lose sight, however, of the fact that any case of cancer left to itself is fatal in one hundred per cent, and that cases cured at all are so much to the credit of the treatment. Still we continually try to increase the number of permanent cures.

It has been my observation that radiation secures its most remarkable result in the more rapid growing and soft cells. Malignant disease of the bone gives very poor results from radiation, while, on the other hand, soft rapidly growing tumors appear to melt away under its influence. I think we have all seen cases of inoperable abdominal carcinoma presenting large masses that would melt away under radiation but which were never cured. The theory that I derive from this is that the extension of the carcinoma if radiated in its early stages is particularly amenable to this form of treatment, whereas the original focus is difficult to stamp out. If, then, we have an agent that will take care of the extension when the cells are young and in their most vulnerable stage, we have a wonderful adjuvant to operative treatment. The operation removes the original focus, which is a most difficult thing to do by any other means, while the extension is taken care of by radiation. I believe that in this conception of the treatment of malignancy we are going to get our best results.

The question is a big one at the present time, more so than ever before. As a result of the intelligent cancer education that has been going on for some years, I find that more and more women are coming to me to determine whether or not they have a cancer, because they know as well as any one what the primary symptoms and danger signals are. In this way, I am seeing more and more very early cases of cancer. When the cancer attacks the cervix and we have a condition where the disease is limited entirely to the cervix without any apparent extension, the question arises very acutely, what shall we do with this case; shall we use radium or shall we operate? While one case means nothing, I happened several years ago to have just a case of this sort and decided in favor of radium. The case went on to an apparent complete cure. Relatives who were interested in the case took her to another surgeon for his unbiased opinion. He pronounced the case entirely cured. Notwithstanding this, she subsequently developed a rapid recrudescence and died from the cancer. Since then I have, when in doubt, operated, but I operate in conjunction with radiation. The technique which I use is, first, radiation of the pelvis by deep X-ray therapy. This is given in rather strong doses, sometimes giving one exposure, in other cases two. This is followed by a prompt operation, doing the usual pan-hysterectomy. When the patient gets over the operation, she is subjected to a series of X-ray treatments.

While the number of cases is as yet small, the results obtained so far have been most gratifying, and I feel that in this method of treatment we have the best solution so far for the treatment of cancer of the cervix when seen in the operable stage. In inoperable cases, radium, I believe, gives the best results for the cervix, deep X-ray therapy for intra-abdominal conditions. In a case of primary carcinoma of the ovary seen about eighteen months ago it was found on abdominal exploration to have extended and infiltrated all of the other organs of the pelvis. Diagnosis was confirmed microscopically. Notwithstanding this hopeless condition, which ordinarily would have meant death in a very short while, she was given deep X-ray therapy. At the present time she has no pain, is feeling well in every way except for the effects of the menopause, and in every way appears to have made a good recovery. She has, however, a mass that can be palpated by bimanual examination and which undoubtedly represents the original focus of the disease. However, she has had at least a year of good health although eventually she will probably succumb to this malady.

I would like to say something about diathermy but our experiences have been too short up to the present time for us to report. We have, however, had some rather interesting experiences with favorable results so far in carcinoma of the vulva.

The following conclusions express the intent of this paper:

1. It is not wise to build all of our hopes on one form of treatment alone. Often in the combination of treatments different aspects of the case are met and the final results improved.

2. The removal of the original focus, where possible, is always desirable, and it can best be done by surgery.

3. Radiation finds it most useful field dealing with the early implantation of cancer cells. It is, therefore, particularly applicable to the extension of the disease, and in a prophylactic way stamps out hypothetical cells which cannot be detected.

ETIOLOGY OF APPENDICITIS—ALL FORMS.*

By E. L. LAWRENCE, M. D., Roanoke, Va.

It is the strong belief of Sir Henry Gray that at least 75 per cent of cases of inflammation of the appendix, whether acute or chronic, are due to anatomical conditions which result from excess or failure of what he had primarily called "developmental or physiological fusion of the viscera in its neighborhood."

The appendix varies greatly in the position which it takes up in the abdomen. While it frequently occupies the position ordinarily ascribed to it in relation to the cecum under McBurney's point. it may be tucked away under the lower part of the mesentery, or behind the ascending colon, or up under the liver. Indeed, it may occupy any part of the abdomen.

As has been many times pointed out, the person with abnormalities of the appendix and adjacent colon usually has abnormalities affecting other abdominal organs, the effect of which in the appendix and other organs is felt throughout the body. Sir Henry Gray believes that a mobile cecum and ascending colon plus the developmental adhesions, which accompany that condition, are responsible for the great majority of cases of appendicitis, both acute and chronic.

He then states his theory is that (1) a dilated loose cecum and colon are very frequently the cause of appendicitis, because in association with them are developmental adhesions, which often limit the mobility of the appendix; (2) when any part of the bowel becomes affected by inflammation, either directly or indirectly, or by contiguity, its activities tend to cease and the affected part becomes unduly dilated.

When, during development, the cecum "hesitates" under cover of the liver before descending to the right iliac fossa, it contracts adhesions there, or rather the omentum, which is attached to it, does. These adhesions are drawn out, as the cecum descends, into the thin filmy structure known as Jackson's membrane or veil. If the appendix projects from the cecum, horizontally under the liver, it is apt to be implicated in the sub-hepatic adhesions which then retard its descent to a greater or lesser degree. The more powerful or heavier part of the bowel, headed by the cecum pushes on and usually reaches the iliac fossa.

The appendix is then found to be hung by adhesions which usually plaster it on to the posterior or anterior aspect of the cecum and ascending colon, although sometimes it quite frees itself while the attachments of the meso-appendix hold it in the retrocolic position.

In discussing the anatomy of the appendix as related to acute and chronic appendicitis, Dr. George M. Crabb (Iowa) calls attention to the fact that the dissecting room idea, and the one most frequently given in the standard text-books on anatomy, is that the appendix hangs free from the lower end of the cecum, in the right iliac fossa, and that its chief function is to become periodically inflamed, finally to rupture and be the source of a general peritonitis, unless removed after an accurate diagnosis.

In his investigations and observations regarding the anatomy of the appendix, Dr. Crabb is pleased to have found support for his own conclusions, which do not entirely agree with the generally accepted text-book descriptions. He has found that a great many, in fact a majority of the appendices, do not hang free from the lower end of the cecum, in the pelvis, but are located behind the cecum, either within the peritoneal cavity, or wholly outside the peritoneal cavity.

Gladstone and Wakely, of London, from their studies, confirm Dr. Crabb's impressions of the position of the appendix. The London observers made accurate observations and records of three thousand cases. They definitely explain the different locations in which they found the appendix. In their examination of these three thousand cases, in the operating room, post-mortem and dissecting room, they found that the whole three thousand fell into one of five positions, as follows:

1. Retrocecal or retrocolic—2,076 cases, or 69 per cent. This position includes those cases

*Read in a symposium on Appendicitis before the Southwestern Virginia Medical Society, at Roanoke, Va., March 31, 1926.

where the appendix was free in the retrocolic pouch of the peritoneum, held in contact with the ascending colon by a short mesentery, adherent to the cecum or colon, and behind the cecum and ascending colon, but owing to the obliteration of the retrocolic pouch, entirely extraperitoneal.

2. The pelvic type—825 cases, or 27 per cent. In this type the appendix hangs free from the lower end of the cecum and, if long enough, may extend into the pelvis. It is in this type, in the female, that inflammatory processes in the appendix may affect the ovary or tube or, in case of inflammation in the tube and ovary, the appendix may be involved secondarily. This type may also involve the bladder or rectum and, in cases of inflammation, pelvic abscesses may develop, both in male and female patients.

3. In 56 cases, or 1.8 per cent, the appendix was in the lower part of the iliac fossa and was usually turned to the right. Should inflammation occur in the appendix in this position and an abscess form, it may penetrate the fascia into the iliac muscle, giving rise to flexion of the hip joint.

4. Anterior or pre-ilial position—27 cases, or 0.9 per cent. This type is uncommon. The appendix is directed upward and forward, towards the anterior wall, or, if operated early, the appendix will be found surrounded by omentum, forming a tumor mass the size of a hen's egg which may be felt through the abdominal wall.

5. The splenic or post-ilial position—15 cases, or 0.5 per cent. This is a very uncommon position.

The embryological development of the appendix is taken up in detail and, according to these observations, the many different positions are explained, but even then, embryological development does not explain why 70 per cent of appendices occur in the retrocolic or retrocecal position. Whether these 70 per cent are in the normal or an abnormal position, the appendix is more apt to become inflamed, because of it, and is more likely to become diseased because of impaired blood supply.

Another factor, etiologically, in the production of appendicitis in the retrocolic position is the obstruction of the lumen of the appendix, due to the kinking of the appendix, either at its base or somewhere between the tip and the base. Because of these obstructions to the lumen of the appendix, fecal concretions, so often found in the inflamed appendix, are formed and there is little doubt of the part these play in the etiology of acute appendicitis.

Aschoff believes the streptococcus, either alone or associated with a slender curved Gram-positive bacillus, is the causal agent. McWilliams found 57 per cent with B. coli, 19 per cent with B. coli and streptococcus, 83 per cent with streptococcus alone in a series of 288 observation. Kelly found B. coli in the majority of his investigations.

The occasional appendices which showed no organisms on either examination, and yet were acutely inflamed, can probably be explained by the destruction of the invading organisms by the defense mechanism of the body, but only after they had done serious damage.

One striking feature is the similarity of the exudate in spite of the various organisms calling it out. The factors giving rise to a phlegmonous inflammation as against the ulcerative, for example, are not etiological, but must be sought for in anatomical peculiarities, or in the locations of the invading organisms. The mucosa is apparently much more resistant than the muscularis or serosa, and the infection often spreads in these layers outside the mucosa, so it is not unusual to find a lesion that appears phlegmonous in one section, to be ulcerative in another.

In 66 acute cases, all early lesions found were at the margin of the lumen. In his conclusions, Dr. Warren states that acute appendicitis may occur without symptoms; that acute appendicitis is not a specific disease due to one type of organism, for, like acute tonsillitis, acute endocarditis and similar infectious lesions, it may be caused by a variety of organisms.

PRE- AND POST-OPERATIVE MEDICAL TREATMENT OF APPENDICITIS.*

By J. D. WILLIS, M. D., Roanoke, Va.

The title of my subject in this symposium—Pre- and Post-Operative Medical Treatment of Appendicitis—presupposes a correct diagnosis. Unfortunately the diagnosis in appendicitis is often uncertain. There are some general rules which have been found that will

*Read in a symposium on Appendicitis before the Southwestern Virginia Medical Society, at Roanoke, Va., March 31, 1926.

often safeguard the life of an individual suffering with appendicitis in its acute stage. These are equally applicable to other acute abdominal conditions prior to a certain diagnosis, and should be instituted whenever an acute abdomen is suspected, namely,—absolute rest, complete abstinence from food, the application of an ice-bag over the region of the cecum, or, in some instances, the application of hot fomentations. Purgatives, and in most cases enemata should be interdicted.

As soon as the diagnosis has been made, and while arranging for operation, it is safe to use enough morphine hypodermically to relieve the pain and quiet intestinal peristalsis. The only rational treatment for acute, suppurative, or gangrenous appendicitis is immediate operative intervention. When it has been concluded that subacute or chronic appendicitis exists and there are no special objections to operation, it is advisable to have the appendix removed.

Chronic appendicitis may be one of a group of intestinal infections, including the ileum, cecum and colon which follow from visceroptosis. Intestinal stasis and disturbance of circulation from visceroptosis predispose to a low-grade infection. Operation in such cases is rarely beneficial. Symptoms may be relieved by careful regulation of the bowels. This is best done by appropriate diet and exercise. Regular daily bowel habits should be carried out and if there should be any spasm of the rectal sphincter, it should be dilated sufficiently often to overcome the spasm. Large quantities of water should be consumed and abdominal exercise carried out. Intestinal lubrication and peristaltic stimulation by the administration of vaseline, liquid petroleum, agar or psyllium seed is often of great benefit. Injections of oil into the colon are occasionally of value.

I want to urge that the utmost care be taken to prove or disprove the presence of subacute or chronic appendicitis prior to resorting to surgical intervention, as I am firmly convinced that many innocent appendices have been removed and diagnosed pathologically as chronic appendicitis that were in no way responsible for the symptoms complained of.

Post-operative medical treatment varies somewhat with individual operators. Elevation of the head of bed in accordance with the severity of the findings and symptoms at the time of operation is agreed upon except where there is great shock. Opiates are justified in the early period after operation. Fluids are necessary and should be given by bowel until they are taken in sufficient amount by mouth. At present tap water, as suggested by Trout, given by the Murphy drip, seems to be most used. Water should be given by mouth as soon as the stomach will tolerate it. Bowel feedings may be necessary if for any reason it cannot be retained by mouth. Liquid nourishment by mouth can usually be given after twelve or fourteen hours.

If high fever should prevail, cool sponging should be carried out and an ice-cap applied to the head. In case of shock or toxemia, the patient should be kept warm in bed and it may be necessary to resort to intravenous injections of saline, or saline and glucose. At times it is advisable to add adrenalin to the saline. In severe cases of shock or toxemia, it may be necessary to resort to blood transfusion. If abdominal distention should become troublesome, it is often relieved by gastric lavage or high enemata, or both. the composition of the enema varying in accordance with the immediate indications. Soap-suds enema may suffice, or it may be neccessary to add turpentine, magnesium sulphate, ox-gall or alum. Pituitrin is used to good advantage in conjunction with enemata in distention.

In the acute form of appendicitis there is always more or less local peritonitis. In fact, the peritonitis may become general and severe. When this happens the clinical complex presents a more critical appearance, and treatment will be varied to meet immediate indications. Stimulation may be necessary and the drugs most generally used in accordance with immediate indications are strychnine, digitalis, camphor, spartein, and adrenalin.

SURGICAL TREATMENT OF APPENDICITIS.*

By NAT H. COPENHAVER, M. D., F. A. C. S.,
Bristol, Tenn.-Va.

In discussing the surgical treatment of appendicitis we are dealing with an organ of the abdomen which more than any other undergoes pathological changes. In spite of this fre-

*Read in a symposium on Appendicitis before the Southwestern Virginia Medical Society, at Roanoke, Va., March 31, 1926.

quency it still holds, and rightly so, the respect of every thoughtful physician. The mortality from appendicitis alone in the United States, quoting from Willis, is about 16,000 yearly.

Appendicitis is no respecter of persons; it occurs in all walks of life, and at all ages, but its greatest toll is in the young, and for this reason it behooves us as a profession to do our utmost in every way, by educational propaganda, better diagnoses and surgical technic, to lessen this evil. It is appalling to realize that the annual deaths from appendicitis are equal to all of those from salpingitis, pelvic abscess, ectopic pregnancy, gall-stones and surgical diseases of pancreas, spleen and thyroid. Economically, the present loss cannot be estimated. How gratifying to feel that a young life has been saved to do its allotted part in the economic development of the community. I do not feel that it would be putting it too strong or over-exaggerating to say that nearly all lives lost from appendicitis are thrown away and wasted; in an ideal state, very few deaths should occur.

The diagnosis and differential diagnosis have been ably discussed.

Chronic appendicitis alone, or associated with other diseases, such as cholecystitis, pelvic infections, gastric and duodenal ulcers, might be discussed at length but time will not permit; therefore, the contents of this paper will be confined to acute cases.

Given a diagnosis of acute appendicitis or an acute abdomen, for, in many instances, that is as far as human knowledge will allow us to go, the surgeon is then called upon to give an opinion.

Many factors must be considered before such an opinion is rendered. Because of this there have arisen two distinct schools: those who believe an operation should be performed in every case as soon as a diagnosis is made, and, secondly, those who are more conservative and feel that in the late cases operation should be postponed. The slogan, "Too late for an early operation and too early for a late operation," is well known to us all. It is important to remember that no hard and fast rule can be adopted for the late cases, for time is by no means the only factor. Much depends upon the study of all the facts and circumstances of each individual case.

Temporizing is notoriously unsafe in children and old people whose resistance to infection is much below that of the adult in middle life.

Much responsibility, therefore, falls upon the surgeon. The operation, when decided upon, should be performed in a few minutes with the minimum of disturbance of the intestines and peritoneum and the least amount of anesthesia. Too much emphasis cannot be put on gentleness. Speed without respect for tissues is dangerous. A combination of experience, judgment, skill and speed is priceless, and under these circumstances the risk of spreading the infection and lowering the resistance is slight.

In addition to the high mortality there is a high morbidity rate, such as prolonged drainage, fecal fistula, adhesions, subphrenic, liver or pelvic abscess. Prompt treatment of appendicitis is without morbidity. In cases operated upon within the first twelve hours, the mortality is practically nil; within the first twenty-four hours, the mortality is about 1 per cent.

Mortality occurs almost entirely among cases operated upon between the second and fifth days, and here the mortality is confined chiefly to one class of cases, those showing evidence of generalized peritonitis, recognized by:

1. General abdominal pain.
2. Pain extending beyond the appendix.
3. Pain, and at times dullness, in flank.
4. Abdominal distention.
5. Rapid pulse and shock.

As before mentioned, time is only one factor to be considered in deciding on an operation. A mild case or a subsiding case, without any evidence of peritonitis or abscess, may as safely be operated upon on the fifth day as on the first.

In my experience all late cases showing evidence of a beginning peritonitis are best treated medically. Such treatment consists in:

1. Absolute quiet in bed, placed in the Fowler position with ice-bags to abdomen.
2. No fluids by mouth. Fluids to be given only by hypodermoclysis and proctoclysis.
3. Opiates in sufficient amount to keep patient quiet and to arrest peristalsis.

Usually about the fifth or sixth day the temperature drops and then operation should be performed at once. Longer delay, especially in the young and old, subjects the patient to danger of general sepsis.

There are a certain percentage of patients with peritonitis who do not respond to such treatment. If, after a week of expectant treatment, the patient does not improve, an operation under local for drainage alone without any attempt to find or remove the appendix is justifiable and may prove beneficial.

In England, Rowland reports from Guy's Hospital a mortality of less than 1 per cent for cases operated upon within the first twenty-four hours of onset. In late operations the mortality was at least 3.5 per cent and as high as 10.5 per cent for operations performed on the third and fourth days.

Love found the mortality in 341 delayed operations to be 3.5 per cent, which compares very favorably with that of 103 operations carried out on the third and fourth days with over 10 per cent mortality, or with that of 1,677 immediate operations, including both early and late cases, which showed a mortality of 5.8 per cent. He also found that the complications in all the late cases treated expectantly were 6.7 per cent, compared with 11.9 per cent in the late cases subjected to immediate operations.

Deaver and Magoun, in reviewing 5,488 appendectomies performed at the Lankenau Hospital, Philadelphia, found that the mortality within the years of 1901 to 1905 was 10.5 per cent.

In the next four years, within which period the Fowler-Murphy-Ochsner treatment was instituted. the mortality fell to 5.6 per cent. Beginning in 1910, when all cases of spreading peritonitis were treated by the expectant method, the mortality fell to 3.7 and 4.2 per cent, respectively, for each five year period.

From the above statistics, medical treatment of the late cases of peritonitis certainly seems to offer the patient most. Suffice it, however, to say that the mortality at best is too high, and compares very unfavorably with the mortality of 1 per cent in early cases operated upon within the first twenty-four hours. Early diagnosis and quick surgical interference will reduce our mortality to a minimum and entirely eliminate the morbidity.

It is not always easy with the abdomen open to verify the pre-operative diagnosis, assuming it to be correct. An appendectomy is generally looked upon by the profession and laity as a simple procedure, though it may in the hands of the most skilled prove very difficult.

The appendix may be buried in either the ileo-cecal or sub-cecal fossa. Confusion also may arise when the appendix is retro-cecal or retro-colic. Identification of the ileo-colic and ileo-cecal folds, following the latter to the meso-appendix and appendix saves time and avoids confusion. Quoting Deaver, "Anatomical landmarks, particularly in the presence of a clear horizon, should make recognition very clear and, in the presence of a foggy atmosphere, give confidence and help which facilitates operative procedure and therefore makes it safer."

The type of incision to be used is one of personal preference. The Grid Iron incision allows for very little exploration and should, therefore, be confined for the most part to typical cases of appendicitis in children where intercurrent diseases are much less frequently met with.

Various drainage devices have been advocated. Adequate and free drainage is essential, and whether we use rubber tubing, glass tubing, or the Penrose drain with gauze, is a matter for the surgeon to decide. In all free drainage cases, the dressings should be changed often. A well soaked dressing retards rather than facilitates drainage. This point is emphasized by Sistrunk, who advocates changing the dressing every hour in all cases of peritonitis where good drainage is imperative.

Post-operative treatment is better standardized, and in the main consists in:

1. Administration of an adequate amount of fluids, 2,500 or 3,000 c.c. daily.
2. Morphine.
3. Starvation until peritonitis has subsided.
4. Gastric lavage.
5. Frequent examinations for secondary abscesses.
6. No catharsis.

Of these, the administration of large quantities of fluids and gastric lavage are perhaps the most important as well as the most neglected. The passage of the stomach tube is repulsive to the patient and for this reason is oftentimes neglected.

The more common complications after operation include shock, hemorrhage, peritonitis, mechanical obstruction, paralytic ileus, secondary abscesses, and, during convalescence, pulmon-

ary embolism, phlebitis, acute cardiac dilatation and pneumonia.

Obstructive symptoms may occur a few hours following an operation, or they may occur a week or ten days following an apparently normal convalescence. Following general peritonitis, plastic adhesions may occur to cause kinking of the small intestine anywhere along its course. In cases of obstruction in the jejunum regular and repeated washing of the stomach may reduce the toxemia very perceptibly. Draper has shown by animal experimentation the great danger of the retained secretions of intestinal loops, particularly in the upper abdomen.

Mechanical obstruction and secondary obstruction or paralytic ileus are of the above mentioned complications the most dreaded. In such cases palliative treatment and temporizing on the part of the surgeon is justifiable for two or three days in the hope that the condition is temporary or that he is mistaken in the origin of the symptoms. Beyond this, the condition is made more serious by waiting, and then it is that an enterostomy becomes an operation of expediency and necessity. C. H. Mayo says, "The inestimable value of enterostomy, when the operation is indicated, is apparently not fully appreciated by the medical profession. Certainly the prompt relief secured when it is made either for alimentation or for the relief of obstruction is so immediate and effectual that the slight hazard and simplicity of the operation should not weigh in the balance in leading to delay in its application. The operation is of greatest importance in relieving obstruction which occurs within a few days after a laparotomy."

It is agreed if the obstruction is easily located and can be relieved at the primary operation, it is best to do so. Oftentimes, however, a formidable operation is out of the question, and it is in this type of obstruction, when the patient's condition is already serious and the resistance lowered from recent laparotomy, that enterostomy performed under local anesthesia proves to be of life-saving value. When done in early cases, the results are very gratifying. Within a few hours the whole picture will change. The distention and pain will disappear, the pulse will slow and the anxious, observing facial expression of anguish will change to one of quiet and comfort. Thus, the crisis passed, secondary operation for relief of the obstruction may be performed if necessary a few days later.

In such cases the surgeon's anatomical knowledge is often put to the test. He may be confronted with the necessity of distinguishing a loop of small intestine and, as an aid to this, I wish to quote from W. J. Mayo:

"The small intestine, originating in six primary convolutions on the right side, has its mesentric attachment from left to right, from above downward, passing behind the umbilicus. This is the reason why in obstructive and other disturbances of the small intestines, unless localized by involvement of the peritoneum, the pain is referred to the vicinity of the umbilicus, although the cause of the pain may be in a loop of intestine at a distance. In picking up a loop of small intestine, it is some times difficult to determine which direction is up and which is down. Monks, in a beautiful piece of work, has shown how this can be done with facility. If a loop of intestine drawn out of an abdominal incision is held by the assistant and the surgeon, grasping the intestine with the fingers on one side and with the thumb on the other, passes down to the bottom of the mesentery, and finds that his fingers and thumb still grasp the root of the mesentery as started above, the anal end is down: but if the hand is reversed at the base, then the direction is the opposite. In picking up a piece of small intestine one should be able to recognize the part of the bowel from its appearance. The upper jejunum is thick and wide, the mesentery is thin, and the vessels are large, long and straight, having but one or two primary arcades close to the base. In the lower ileum the intestine is thin and the mesentery thick, the fat sometimes following the vessels a little way up along the intestinal wall. The vessels are smaller, shorter and there are a number of arcades, sometimes two, three or four in the adjacent mesentery. Attention to these details makes ready differentiation possible."

In conclusion, the following points should be stressed in the spirit of constructive criticism:

1. Appendicitis is on the increase and unlike, for example, kidney and thyroid surgery which previously carried a high mortality but has very materially decreased in recent years.

the mortality from appendicitis has increased.

2. Economically the loss from appendicitis is enormous, the largest number of deaths occurring in children and young adult life.

3. Early diagnosis and prompt surgical interference and the strictest post-operative vigilance will reduce the mortality to a minimum and practically eliminate the morbidity.

4. Appendicitis is common, and the removal of a simple appendix may require very little surgical training or skill; however, the fact remains that it is often very difficult and the post-operative treatment alone may tax to the limit the ingenuity and judgment of master surgeons.

REFERENCES.

Willis, A. M. *Va. Med. Mo.*, April, 1925, Volume 52.
Willis, A. M. *Surg., Gynec., Obstet.*, March, 1926, Volume 42, Number 3.
Rowland, R. P. Guy's Hospital Reports, January, 1925, 75, 69, 77.
Love, R. J. McNeill. *British Jour. Surg.*, October, 1924, 12, 232, 237.
Deaver, J. B., and Magoun, J. A. H. *Amer. Surg.*, 1924. 79, 854.
Sistrunk, W. E. Personal Communication.
Mayo, C. H. Collected Papers Mayo Clinic, 1920, Volume 12, 173.
Draper, J. W. *Jour. A. M. A.*, 1915, 54, 59.
Mayo, W. J. *Jour. A. M. A.*, 1920, 74, 367, 372.
Monks, Quoted by Mayo, W. J.

CARCINOMA OF THE PANCREAS.*

By WM. H. HIGGINS, M. D., Richmond, Va.

On account of recent studies on the pancreas there has been a renewed interest in the diseases of this organ. In view of the fact that a disease or disturbance of function of this gland is usually attended by gastro-intestinal disorders, the general practitioner is logically in a position to see these cases in their incipience. The recognition, however, of these pathologic changes is not always readily accomplished.

The facts that the pancreas is comparatively inaccessible, and often shows no definite evidence of impaired function even in the late stages of disease, are the chief difficulties in reaching an early diagnosis. Because of these peculiar circumstances, carcinoma of the pancreas is often recognized by its effect on adjoining structures, a condition which is apparent when we consider the anatomic relationship of this organ to the surrounding structures.

Since the pancreas has no capsule, its head lies directly against the duodenum and its anterior surface comes in intimate contact with the transverse colon. Its body also forms a considerable portion of the bed of the stomach and actually touches the pylorus. The tail is in contact with the spleen and lies adjacent to the left suprarenal gland of the left kidney. The head of the pancreas is only a short distance from the gall-bladder and ducts and the body lies directly over the inferior vena cava.

In spite of extensive studies on pancreatic functional tests, we have as yet no reliable laboratory procedures which can consistently give us any incontrovertible evidence of a diseased organ. The older methods of examining for excess of fat and undigested muscle fibres in the stools are still employed, but the fact remains that evidences of inflammatory or malignant disease of the gland may exist without producing tangible changes in the feces. More complicated tests are now being elaborated but are as yet too much involved to be efficiently carried out in the average laboratory.

The diagnosis, therefore, of carcinoma of the pancreas rests to a large measure upon the effect of the growth on the adjoining structures. On account of this close relationship to other abdominal organs, the symptoms and physical findings form no well-defined syndrome. There are, however, certain outstanding points in the diagnosis of this disease which occur with sufficient frequency to be of aid in the recognition of this condition.

This report is based on a clinical study of fourteen cases of carcinoma of the pancreas which have been recognized at St. Elizabeth's Hospital. All diagnoses were confirmed at operation or post-mortem examinations. Twelve of these cases entered the hospital during the last five years, which gives an incidence of 2½ per cent of all malignant diseases treated during that period.

In this series of fourteen cases there were seven males and seven females. The average age was 62, the youngest being 47 and the oldest 76. The duration of symptoms varied from three weeks to twelve months, the average being six months. The most outstanding symptom was *pain* which was present in the history of twelve of the fourteen cases. The character of the pain was significant: in some it was described as a sharp cramp-like stab in the right or left hypochondrium, occurring intermit-

*From the Medical Department, St. Elizabeth's Hospital, Richmond, Va.

tently, but the majority complained of a more or less constant pain extending from the epigastrium to the back. Some forms of digestive disorder, such as *gas*, *nausea*, *lack of appetite*, etc., were present in ten histories, in five of which persistent *vomiting* was a prominent symptom. Contrary to the usual emphasis in text-books on the frequency of pancreatic diarrhea, only one case gave a history of *diarrhea* which alternated with constipation. In eight of the series *constipation* was a prominent factor. Studies of the stools were not made routinely, but the results in those examined apparently offered little assistance.

In all but four cases in this series *loss of weight* was a marked feature, varying from 20 to 80 pounds. In the absence of other evidence, this symptom carries with it considerable significance. *Jaundice* was present in eight cases, five of which were complicated by severe itching. In those cases where the lesion was located in the body or tail of the pancreas jaundice was not apparent.

In the abdominal examinations of these patients, six had a *palpable mass* located in the epigastrium, usually near the left hypochondrium. The mass was described as being firmly fixed, not painful and did not move on respiration. In five of the series there was episgastric *rigidity*.

The absence of glycosuria was striking. In only one instance was sugar present during the patient's illness. In Mayo's series of 138 cases of carcinoma of the pancreas, glycosuria was present in 10 per cent of the series. In one patient, symptoms of diabetes antedated evidences of malignancy by two years. The rarity of glycosuria in these cases is difficult to explain. Even when to the naked eye the entire gland appears to be extensively involved at autopsy it is uncommon to find sugar in the urine. It has been suggested that either the Islands of Langerhans are relatively immune to the neoplastic growth or a few remaining islands are sufficient to handle the carbohydrate metabolism. Glycosuria in the presence of pancreatic carcinoma means an extensive disease of the organ.

In one other case in our series, a patient, age 71, gave a history of diabetes for two and one-half years previous to her admission to the hospital. During this time her attending physician found her blood sugar at 250 mg. per 100 c.c. of blood and 10 grams of sugar in a twenty-four hour specimen of urine. She was placed on an adequate diet with satisfactory results.

On her admission to the hospital ten months later her urinalysis was negative and there was a persistent hypoglycemia averaging from 60 to 70 mg. of sugar per 100 c.c. of blood. An explanation of this reversal of events is not apparent, unless it was due to a state of chronic starvation resulting from an uncontrolled vomiting.

The operative findings in this series were conclusive and similar in many respects. In agreement with Courvoisier's law, the gall-bladder was found enlarged or distended in nine cases.

In the differential diagnosis of carcinoma of the pancreas, it is necessary to include all chronic lesions in the upper abdomen which are associated sooner or later with jaundice as well as those in which janndice plays no part.

The most frequent disease to encounter in this group is common duct stone. The history of acute attacks of colicky pain felt deep in the right side and radiating to the back and right shoulder, usually accompanied by jaundice, without marked loss of strength and weight are characteristic features. The jaundice in these cases is not as a rule the deep olive green of malignancy and there is not the systemic break down generally found in the latter condition.

Chronic pancreatitis will sometimes closely simulate carcinoma of the pancreas. In these cases the patients are as a rule younger and their symptoms are characterized by less acute pains in the epigastrium, often associated with fever and a gradually appearing jaundice. The loss of weight and strength is not so persistent and striking as in carcinoma.

Cirrhosis of the liver may likewise share in a measure the clinical picture of a pancreatic lesion. Here we are likewise dealing with an earlier decade and, although the constitutional symptoms and digestive disturbances may be equally severe, there is not the same degree of pain or extreme grade of jaundice. The enlargement of the liver may be found equally pronounced in either condition.

In carcinoma of the gall-bladder, differential diagnosis is more difficult. Here a palpable tumor in the region of the gall-bladder may be found, jaundice is more or less persistent, and pain and loss of weight and strength in

advanced middle life are in common with the symptoms of carcinoma of the pancreas. In the majority of these cases, however, there is an antecedent history of gall-stone colic and the females are affected four times as often as males (Eusterman).

Carcinoma of the stomach or gastric ulcer share in a measure with some of the symptoms of carcinoma of the pancreas, but X-ray examinations usually separate these cases without difficulty.

Conclusions

A report of fourteen cases of carcinoma of the pancreas occurring at St. Elizabeth's Hospital is submitted.

The average age was 62 and the average duration of symptoms was six months.

The sex incidence was the same in both.

The chief symtpoms were *pain* in epigastrium and back, *jaundice*, *weakness* and *rapid loss* of *weight*.

The pain and gastric disturbances were not influenced by food or alkalies.

Constipation was a frequent symptom and, contrary to the usual text-book description, loose pancreatic stools were seldom found.

X-ray studies are of little value and laboratory tests are of only limited assistance in recognizing this disease.

COMMON EYE CONDITIONS SEEN BY THE GENERAL PRACTITIONER.*

By CHARLES A. YOUNG, M. D., Roanoke, Va.

Ophthalmia Neonatorum

Ophthalmia neonatorum is caused by the gonococcus in about 60 per cent of the cases only, the remaining 40 per cent being due to the pneumococcus, staphylococcus aureus, Koch-Week's bacillus, colon bacillus, diplobacillus of Morax-Axenfeld, streptococcus, influenza bacillus and the diphtheria bacillus. The symptoms appear from the second to fifth day following birth, with a rapidly developing and severe muco-purulent conjunctivitis.

Treatment is first prophylactic, using either Crede's method of instilling one drop of a 2 per cent silver nitrate solution in each eye, or, preferably, one drop of a 1 per cent silver nitrate solution in each eye, which is less irritating and just as efficient. It is true that the non-gonorrheal cases are not as a rule as severe as those due to the gonococcus, but it is to be remembered that at times the gonorrheal cases are sometimes mild and for that reason a smear should always be taken for microscopic study. After the disease makes its appearance and is unilateral, protect the good eye with a Buller's shield which is easily made by using an ordinary watch crystal and zinc oxide adhesive, leaving an opening temporarily for ventilation.

The eye, or eyes, if bilateral, should be irrigated every fifteen to thirty minutes day and night with a saturated boric acid solution. These cases require a special nurse, day and night, who must be instructed to be extremely careful in irrigating the eye, not to injure the cornea.

Injections of boiled milk should be used, beginning with 2 c.c., and repeating every forty-eight hours. The amount of milk injected should be increased, depending upon the severity of the reaction, usually adding 2 c.c. every other day up to 10 c.c., which is, as a rule, the largest dose required. The milk does not materially shorten the disease, but does decrease markedly the production of pus and also lessens the pain and discomfort.

Once a day it is well to paint the lids with a 2 per cent solution of silver nitrate, and follow with an irrigation of physiologic salt solution. Cold compresses to the lids continuously (when no corneal complications are present and the lids show no signs of poor circulation) relieve pain and lessen inflammation and edema. Personally I have never seen an eye lost from ophthalmia neonatorum if the cornea was unaffected when first seen.

Convergent Concomitant Squint

The eyes are first noticed turning in usually from the second to the fourth year of life. As one eye only turns in, the eye that squints will, from lack of use, soon develop an amblyopia which, if permitted to continue without treatment, will result in the permanent loss of acute central vision in the squinting eye. The two essential indications in a case of squint are, first and most important, the preservation of vision in the squinting eye, and, second, to straighten the squinting eye.

To preserve vision the patient must be seen as soon after the squint occurs as possible and always before reaching the age of six years. Before the age of six years vision can be preserved and developed by proper glasses, and, either by bandaging the non-squinting eye or

*Read before the Southwestern Virginia Medical Society, at Roanoke, Va., March 31, 1926.

instilling atropine in the non-squinting eye, the squinting eye is compelled to function. From this forced exercise, the vision in the squinting eye will soon equal, if not surpass, that of the non-squinting eye, so that not uncommonly the squint is transferred to the opposite eye.

Straightening the eye from the parents' standpoint is the prime consideration, but from ours the second consideration. Glasses will straighten 60 per cent of the eyes, but if the glasses do not, you can at any time operate and straighten them, while no one can put vision in the squinting eye after the patient is six years of age.

Congenital Dacryo-Cystitis

Congenital dacryo-cystitis is not uncommon in young babies, and is caused by a failure of the lower extremity of the nasal duct to open, resulting in decomposition of the contents of the lachrymal sac and irritation of the mucous membrane of the lachrymal passages with the production of a muco-purulent discharge.

Parents first notice that the eye "tears" and, later, the presence of a muco-purulent discharge in the eye. The remedies ordinarily prescribed for a conjunctivitis have no curative effect, as the mechanical obstruction cannot be corrected by drugs. By making pressure over the lachrymal sac once or twice a day, the contents of the sac are forced through the canaliculi and punta into the conjunctival sac and in many cases the discharge is forced downward through the lower end of the nasal duct, thus relieving the stenosis and resulting in a cure of the condition.

Having tried the pressure treatment for one to two weeks without success, probing the lachrymal passage with a lachrymal probe will open the nasal duct and permit free drainage of the tears.

Chronic Dacryo-Cystitis

Chronic dacryo-cystitis is usually unilateral and first makes its appearance as a tearing in the affected eye, the tearing being worse in cold windy weather: later the contents of the lachymal sac, being mucopurulent, irritates the conjunctiva, resulting in a chronic conjunctivitis. The presence of a chronic unilateral conjunctivitis should always make us suspicious of a chronic dacryo-cystitis.

Pressure over the lachrymal sac causes a regurgitation of mucoid or muco-purulent material into the conjunctival sac. A simple method of ascertaining the patency of the lachrymal apparatus is by instilling a few drops of argyrol solution into the conjunctival sac, and, after waiting a few minutes, have the patient blow his nose; the stain of the argyrol will be seen on his handkerchief if there is no obstruction. A chronic dacryo-cystitis is particularly dangerous, as the pus usually contains the pneumococcus organism. The eye being at all times bathed in pus, the slightest injury to the cornea may result in a serpigenous ulcer, which means the loss of the eye, or at least an unsightly scar of the cornea with more or less reduction of vision. The extirpation of the lachrymal sac is the most satisfactory treatment, rids the eye of pus, permits the conjunctivitis to clear up and removes the potential danger of serpigenous ulcers. The tearing usually gives very little trouble and is always less than that present before removing the sac.

Glaucoma—Cataract

Simple chronic glaucoma is sometimes mistaken for cataract and the patient told to wait until he is unable to see or until the cataract ripens before consulting an ophthalmologist. The use of the ophthalmoscope will immediately show whether a cataract is present. When an ophthalmoscope is not used, the diagnosis is often difficult, as the two conditions often have the following symptoms in common:

1. Gradual loss of vision.
2. A grayish reflex from the lens by focal illumination.
3. Normal tension.
4. Absence of pain.

Glaucoma may occur at any age and is not limited to elderly people; furthermore, glaucoma often runs its course without pain or any noticeable rise in the intra-ocular tension.

Local Anesthetic

Instillations of butyn in 2 per cent solution is the anesthetic of choice for use in the eye as a preliminary to the removal of foreign bodies and for the relief of pain caused by ulcers and abrasions of the cornea. The advantages of butyn over cocain are:

Butyn

1. Solution can be boiled.
2. Solution antiseptic.
3. Does not cause drying or roughening of the cornea.

4. Does not dilate pupil.
5. Not under Harrison Narcotic Law regulation.

COCAIN

1. Solution cannot be boiled.
2. Solution not antiseptic and soon shows fungus growths.
3. Causes drying and roughening of the cornea.
4. Dilates pupil.
5. Under Harrison Narcotic Law regulation.

Butyn can with advantage be prescribed in castor oil (2 per cent solution) for its action in relieving pain and preventing adhesions (symblepharon) after burns of the conjunctiva with lime, ammonia, or acids.

Gill Memorial Eye, Ear and Throat Hospital.

BACILLARY DYSENTERY—REPORT OF A CASE.*

By
O. O. ASHWORTH, M. D., and R. W. UPCHURCH, M. D.,
From the Medical Department of St. Elizabeth's Hospital.
Richmond, Va.

With Laboratory Discussion

By
AUBREY H. STRAUS, M. A.,
Richmond, Va.

Mrs. A., patient, white, 70 years old, was admitted to St. Elizabeth's Hospital on a stretcher, August 9, 1925. She complained of a severe diarrhea, tenesmus, fever, abdominal pain, and occasional nausea and vomiting. She had been treated for these symptoms for a period of six weeks at Hot Springs, Va., with no improvement. She had gradually lost weight and become very weak. Family history negative; past history essentially negative. She had lived in Virginia practically all of her life and had made no recent trips from Bath County.

Physical examination showed a slightly obese patient with signs of recent loss of weight, pale skin, and a moderately toxic appearance. There was moderate right nasal obstruction from enlarged turbinate. She was unable to hear whispered voice in either ear but could hear low spoken voice. Fecal breath and coated tongue. Pharynx was moderately injected; tonsils were small and cryptic, but contained no exudate. *Heart:* Apex impulse was palpated in the 5th interspace 11 cm. from mid-sternal line. Retro-sternal dulness was 7 cm. in the 2nd intercostal space. Pulse rate 110 to the minute. Radial and axillary vessels slightly palpable. First sound at the apex was of medium quality. There was an occasional extrasystole. Second sound at the base was slightly diminished. A soft systolic murmur was heard in the first and second intercostal spaces, and transmitted to the neck. Blood pressure 170 systolic and 80 diastolic. *Lungs:* Were apparently clear with exception of medium moist rales at both bases posteriorly, which had a tendency to disappear after expiratory cough. *Abdomen:* Pendulous, slightly distended, tympanitic to flanks. There was moderate general tenderness, more marked on the left side, with definite muscle spasm throughout the left side. There was a low mid-line scar which had healed satisfactorily. The liver and spleen were not palpable and not enlarged to percussion. *Extremities:* There was slight evidence of hypertrophic arthritis of the phalanges, skin was slightly dry; no tremor of fingers. *Reflexes:* Knee jerks normally present. No Oppenheim, Gordon, Kernig or clonus. There was no edema.

A provisional diagnosis of amebic dysentery, chronic hypertension with cardiac hypertrophy, slight arteriosclerosis, slight dilatation of the aorta, and ventricular extrasystole was made. The possibility of a senile diarrhea was considered.

Routine urinalysis was negative except for a trace of albumin and an occasional leucocyte. Blood examination showed hemoglobin 82 per cent, leucocytes 9.200 and differential of small lymphocytes 25 per cent, polymorphonuclears 69 per cent, myelocytes 2 per cent, large lymphocytes 3 per cent. Blood urea nitrogen was 46.70 mg. per 100 c.c. of blood. Blood Wassermann was negative. Stool examination showed no ova or parasites. It was yellow in color with an offensive odor. Red blood cells and leucocytes were abundant. Bacteriological report was negative. A blood culture was taken and dysentery bacilli of the Flexner type were found by Mr. Straus.* A second culture taken 5 days later was negative but the agglutination test was positive for dysentery bacilli of the Flexner type in a titer of 1/400, confirming the previous findings in the blood culture. Hence, a diagnosis of bacillary dysentery, Flexner type, was established. Blood cultures and stool examinations were made every five days thereafter with negative results except for a positive agglutination test for Flexner's Bacillus, which was present on each occasion.

*Read before the Staff Meeting of St. Elizabeth's Hospital, Richmond, Va., November 16, 1925.

*Confirmed by E. M. A. Enlows, U. S. Hygienic Laboratory.

Her clinical course and treatment was as follows: Digitan, ampules 2, intramuscularly, was started for her heart condition. She was put on a light ulcer diet, chalk mixture, and paregoric for diarrhea. For two days her temperature would rise to 102 in the afternoon and fall to 99 in the morning. Respiration 30; pulse rate 120. There was no noticeable improvement. The head of the bed was then elevated. Hypodermoclysis of 5 per cent glucose in Ringer's solution was given, nothing by mouth but orange juice and lactose, with dilute hydrochloric acid, and opium and bismuth subcarbonate for diarrhea. For several days there seemed to be slight improvement. Patient seemed more rational, stools became less frequent, pulse 120, respiration 20, and temperature down to an afternoon rise of 100°. Blood urea nitrogen dropped to 25.5 mg. per 100 c.c. of blood.

August 10.—Acidophilus culture, one-half ounce three times a day between meals, was prescribed. Hot boric acid compresses were used over the abdomen for pain, but were soon discontinued. Alum and silver nitrate every third day were used in colonic irrigations. These were discontinued in seven days due to the discomfort without beneficial results. Opium and bismuth were started again. The patient remained at a stand-still, following the above treatment, for about one week. Temperature began fluctuating between a morning remission of 98 and an afternoon rise of 101-102. The number of stools increased from 18 to 30 in 24 hours. Respiration 20; pulse rate 120. The patient became restless, more irrational and emaciated, taking only broths, junkets, milk and jellies by forced feeding.

On August 25, the above treatment was discontinued and alkalinization of the gastro-intestinal tract attempted, using a prescription containing bismuth subcarbonate, calcium carbonate and sodium bicarbonate, 1½ drams three times a day. At the same time, mercurochrome tablets, 1½ grains, were given three times a day between meals. The mercurochrome caused nausea, vomiting and more severe abdominal pain, so it was discontinued the following day. Respiration was 40, pulse rate 136, and temperature still high and fluctuating. Digitan was started again. Saline solution was given by hypodermoclysis, and morphia for frequent stools and restlessness. Two hundred and twenty c.c. of anti-dysenteric serum (Flexner) were given in 50 c.c. doses twice a day intramuscularly. All of this resulted in no improvement. Pulse and respiration remained elevated and stools as frequent as ever, abdominal pain becoming more marked. She gradually became weaker and passed into a semicomatose state. Nasal feedings were given twice a day. Respiration became faster and difficult. Signs of cardiac failure with congestion of lungs soon appeared. Caffeine, sodium benzoate, atropine, hypodermoclysis, etc., all failed to improve her condition and she died on September 11,—thirty-three days after admission to the hospital.

Her stools were very characteristic, fecal in character with a very offensive odor, loaded with mucus, polymorphonuclear and red blood cells. There were fifteen to thirty stools a day. The mucus soon disappeared.

As the disease progressed she developed a secondary anemia, hemoglobin dropping from 82 per cent to 55 per cent; red blood cells from 4,100,000 to 3,600,000. Differential count changed from small lymphocytes 25 per cent on admittance to 54 per cent; polymorphonuclears 69 per cent to 39 per cent; megaloblasts 2 per cent, normoblasts 1 per cent with oligochromia and anisocytosis, the latter being absent on admission and smear normal in appearance. The agglutination titer was checked at frequent intervals and dropped from 1/400 upon admission to 1/200 a few days before death.

There are two specific forms of dysentery, the amebic and the bacillary. The bacillary form is divided into two types, the Shiga-Kruse and the Flexner. According to Whitmore, the former usually causes a more severe dysentery and is responsible for about 75 per cent of all cases, with a mortality rate of 30 per cent. The latter runs a milder course as a rule, with a mortality rate of 5 per cent, however, in the young, the debilitated, and the aged, the mortality is much higher. Age, sex, race or climate play no part as predisposing causes. It occurs sporadically or in severe epidemics, the mode of transmission being by indirect contact with fecal material; hence, the importance of prophylaxis. It usually runs an acute course of two weeks' duration, or sometimes becomes chronic, lasting for months. Clinically, the disease is characterized by

toxemia, dehydration, anorexia with morning remissions, tenesmus, abdominal pain and frequent stools containing blood, mucus and leucocytes. Anatomically, it is characterized by diphtheritic and ulcerative lesions of the large intestine, caused by the liberation of an endotoxin from the bacilli located in the mucosa. In the severe acute cases, the patient usually dies on the third or fourth day from "toxemic shock." Long-standing chronic cases usually result from lack of efficient treatment during the acute attack or too early a return to a full diet, and the cause of death in such cases is usually due to exhaustion or some intercurrent disease.

It is important to differentiate bacillary dysentery from other conditions that may produce the same clinical syndrome. This is easy in epidemics, but more difficult in sporadic cases where such conditions as amebic dysentery, tuberculosis, syphilis, cancer, and the so-called senile diarrhea must be eliminated. Clinically, amebic dysentery runs a subacute course from the onset and there is no toxemia. Bacteriogically, the amebae are found in the stools. The stools of amebic and bacillary dysentery by careful macroscopic and microscopic examination can be differentiated. The continued appearance of mucus and blood in bacillary dysentery is the important point and not the mere presence as in the case of amebic dysentery. Polymorphonuclear leucocytes are abundant in bacillary dysentery and absent or few in amebic dysentery. In a large percentage of the cases of bacillary dysentery, the bacillus may be isolated in pure culture from the stools if done immediately. Only a few cases have been reported in which the Flexner organism was cultured from the blood stream. However, the agglutination test is positive in a large number of cases, usually after the tenth day, and is considered diagnostic in a dilution over 1:50. Microscopic examination of the blood usually shows a progressive secondary anemia, and a moderate leucocytosis.

In view of the above, more complete laboratory examinations, such as frequent stool examinations, blood cultures and serological examinations should be made as soon as possible in all cases of diarrhea in the aged, for no doubt many such cases are often diagnosed as "senile diarrhoea;" and failure to institute proper treatment immediately, a fact that cannot be over-emphasized, has caused a fatal termination.

The unusual features of the case reported may be summed up as follows:

1. Cultivation of the Flexner dysentery bacillus from the blood stream.
2. Inability to find the bacillus in the stools after repeated examinations.
3. The chronic severity and toxic course of the case compared with the mild course the Flexner type usually runs.
4. Failure to respond to any treatment instituted.

Laboratory Discussion*

From a laboratory standpoint this case is unusually interesting. It is the first time in an experience of fifteen years, with more than 2,600 blood cultures from various types of cases, that the dysentery bacillus has been recovered from the blood stream. Practically all textbooks state that the dysentery bacillus is never found in the blood stream. Investigation, however, reveals 25 cases in which it has been found, the Shiga bacillus 7 times and organisms of the Flexner group 18 times. Glynn and his collaborators[1] (1917) collected 14 cases, to which may be added 1 case reported by Kendall,[2] DeSantelle 1,[3] TenBroeck 1,[4] Thornly 3,[5] Maer 1,[6] Boyd 1,[7] Sellers 1,[8] Scaglione 1,[9] and Heim.[10]

In spite of this, however, these findings are comparatively rare. This may be because the dysentery bacillus only gets into the blood stream occasionally, or it may be that most cases of dysentery show such unmistakable symptoms that blood cultures are seldom made.

The failure here to find the organism in the blood culture after the first attempt is of interest. In this case, even had a blood culture been made at any subsequent date, the findings would have been negative.

It has been suggested that the dysentery bacillus only occurs in the blood stream after a breaking down of the intestinal wall and a general invasion of the body. This theory, however, is not borne out in this case, nor in most of the cases described in literature. The cases in which the dysentery bacillus has been found in the blood stream are by no means all fatal and, in many instances, the organism has been found only in the earlier stages of the

*From Laboratories of Richmond Health Bureau and Virginia State Board of Health.

disease and not throughout its course. In this respect, finding the dysentery bacillus in the blood stream would seem to correspond rather to such occurrences in tyhoid and para-typhoid fever than in generalized septicemia.

The titer of the agglutination in this case is also interesting, the titer earlier in the disease being 1 to 400 and dropping later to 1 to 200. This is contrary to our usual experience where the titer rises, and it may be indicative of a lowered resistance. It is, likewise, a lower titer than is obtained in most cases of bacillary dysentery, as the titer usually runs from 400 to 800 and upon occasion may go as high as 1 to 25,000.

In this case, the organism was never found in the feces. This is also true in a number of the other cases described where the organism was obtained in a blood culture.

In summing up the bacteriological diagnosis of this case, it is well to call attention to the fact that had the blood culture not been obtained as promptly as it was,—that is, one day after the patient's admission to the hospital,—a diagnosis might never have been reached. The agglutination test, of course, would be conclusive, but unless one had reason to suspect bacillary dysentery the patient's serum might never have been tested against the dysentery bacillus. It would have been tried as a routine against the typhoid bacillus and perhaps against paratyphoid bacilli, but there are limits to the amount of work that one can do on a single specimen, and the agglutination test is not tried against all conceivable organisms, but only against certain of those most frequently found. In this way, many diagnoses are unquestionably missed.

We are convinced that bacillary dysentery is much more prevalent than is generally conceded. We are, furthermore, convinced that this disease does not always run true to form, or show typical symptoms. We believe that the dysentery bacillus is capable of producing symptoms quite different from those usually found, as this case demonstrates. This is, likewise, brought out forcibly by Glynn[1] in the report previously mentioned. Glynn quotes from several sources where the dysentery bacillus was found in the blood stream of patients who ran a course resembling typhoid.

Last summer, in Virginia, an epidemic of supposed typhoid fever was reported. It was found upon investigation that most of the cases were not typhoid fever but bacillary dysentery. The cases were discovered too late for the blood culture, or fecal examination, to be of value, but the agglutination test proved the infection to be Flexner dysentery. In this outbreak the orginial diagnosis had been made entirely from clinical symptoms, no specimens being submitted to the laboratory. With the facilities now available it seems unfortunate that physicians should not make every effort to obtain accurate diagnoses. An accurate diagnosis is undoubtedly the first step toward the proper treatment of a case.

BIBLIOGRAPHY.

1. Glynn, E. E. and Associates: Great Britain Med. Research Council Reports. Report V, Special Report Series.
2. Kendall: *Boston Med. & Surgical Journal*, 1913, 741.
3. DeSautelle: *Journal A. M. A.*, 1914, Vol. 63, 1853.
4. TenBroeck, Carl: *Boston Journal Med. & Surg.*, 1915, Vol. 173. P. 284.
5. Thornly, R. L.: *Brit. Med. Journal*, 1916, Vol. 2, P. 555.
6. Maer, C. M. A.: *Brit. Med. Journal*, Sup. and Ep., Vol. 1, 1918, P. 84.
7. Boyd, J. S. V.: *Lancet*, Vol. 2, 1919, p. 482.
8. Sellers, T. F.: Loc. Cit.
9. Scaglione, S.: Ann. di Clin. Med., Palermo, Vol. 8-9, Pp. 21-31, 1917-1919.
10. Heim, Gustav: Inaugural Dissertation, Keil, 1918.
11. Dutton, L. O.: Technic for Bacteriological Diagnosis of Bacillary Dysentery. *J. Lab. & Clin. Med.*, 9:463-468, April, 1924.
12. Haughwout, F. G.: The Microscopic Diagnosis of the Dysenteries at Their Onset. *J. A. M. A.*, 83, 1156, Oct. 11, 1924.
13. Whitmore, E. R.: Nelson Loose-Leaf Living Medicine. Vol. II, 161-174.
14. Graham, Duncan: Nelson Loose-Leaf Living Medicine. Vol. II, 177-189.

THE FREQUENCY AND SYMPTOMS OF PROLONGED RETAINED PLACENTA.

By M. PIERCE RUCKER, M. D., Richmond, Va.

In June of 1921, a general surgeon curetted a patient whom I had delivered the previous November, and made the diagnosis of retained placenta. The patient had had a normal third stage, and the after-birth was apparently intact. Her recovery was uneventful, and she had been in excellent health until just before she was operated upon, when she began to flow profusely. Unfortunately for the purposes of this paper, the tissue removed showed early decidua with uterine glands still present, and chorionic villi composed of embryonal connective tissue

with no blood vessels save a very occasional, centrally situated one. Covering the villi were two well-marked layers of cells, Langhans layer and syncytium. The pathologist's diagnosis was: "The picture is clearly that of early decidua and chorionic villi, complicated by infection, necrosis and acute inflammation."

In the discussion that this case occasioned, I was surprised to find how little there was in the literature upon the symptoms and frequency of prolonged retention of the placenta, either in whole or in part. Reed[1] divides the cases of retention into two classes—(1) where the placenta is partially detached, and (2) where the placenta is entirely adherent. In all cases of the first class there is hemorrhage more or less serious. In the second class the placenta may be retained for a period varying from a few hours to eight or nine months, when some pathological condition, amenorrhea, etc., leads to an investigation. According to Brown,[2] retention of the placenta is much more common after abortions than after full term labors (15 to 1). This seems equally true when you review the literature in reference to *prolonged* retention of the afterbirth. Ross[3] found a placenta in an excellent state of preservation after an amenorrhea of eleven months, following several miscarriages. Richmond[4] reports a *retained placenta* for four months after expulsion of a *two months'* fetus. For a month there was hemorrhage and then regular menstruation and the patient was apparently well. She passed the placenta spontaneously and brought it to the doctor, who hardened and sectioned it, but did not describe it in the report. Lamadrid[5] reports retention of placenta for twenty-two days after a miscarriage of four months. There was no bleeding and no infection. The placenta was intact and showed fatty degeneration. Barthelemy[6] reports a case that had frequent and repeated hemorrhages after an abortion until the placenta was expelled four months afterwards. Howard's[7] case retained the placenta a year after the expulsion of a four months' fetus. Houel[8] reports a case with a very sluggish uterus. On June 11, 1922, his patient expelled a fetus 15 c.m. long, but no afterbirth. On June 19, she expelled another fetus, but no afterbirth. The patient consulted Houel the following August on account of a hemorrhage, and on August 16, he dilated the cervix and removed two placentae with his finger. Gallant[9] reports a case that miscarried at the fifth or sixth month, a year previous to her consulting him. She flowed profusely for two months, then menstruation recurred and was of the twenty-eight day, three-day type. She missed her period two months before he saw her. and when she came to him, she had been flowing continuously for four or five weeks. She passed a fetus and sac complete and curettage showed a considerable mass of degenerated placental tissue. Godson[10] reports an afterbirth retained for eight months after a miscarriage of four or five months. There was profuse hemorrhage after a period of amenorrhoea of eight months. The afterbirth was complete but appeared markedly changed. Wallace's[11] case retained the placenta for two months after a premature delivery at eight months. Josephson[12] reports the case of retention of a full term placenta by a Pole of about thirty-five years, who gave a history of similar trouble on two previous occasions after abortions. Groat[13] reports a case that occurred in 1864. A well-developed seven months' fetus was passed before the doctor could arrive. The cervix was found tightly closed about the broken cord. Fifty-one days later the intact placenta was discharged without pain or bleeding. After a few days in bed the patient resumed her usual duties.

Newman's[14] case retained a placenta two years and discharged it along with a three months' fetus. Fruhinsholz and Mariot[15] have reported an apparently similar case. Their patient was an unmarried woman and no satisfactory history could be obtained. She expelled a living baby, a fresh placenta and a light colored placenta 12½x16½x2 c.m. It weighed 500 gms. and had no cord. Porcher[16] reports the following: Mrs. ———, about thirty-three years of age, gave the history of having had two abortions. She was delivered of a full size child by the breech. There was an hour-glass contraction that prevented the introduction of the finger into the cervix until considerable force was used. The placenta was found firmly adherent throughout its entire extent and resisted all efforts at separation both at the time and later when two consultants, Drs. Glover and Prioleau, saw the case. The cord came away in a putrid state on the third day. One month later the patient had

a severe pain and a sense of heaviness in the uterine region that kept up all night. Examination the next morning showed that the edge of the placenta had begun to separate, but the uterus contracted so firmly that all efforts to assist the separation were futile. The pain ceased entirely and the patient's strength improved daily. She was observed for a year but no part of the placenta passed. Palmer[17] cites the case of Dr. Thansh in which the placentae were permanently retained after two successive full term pregnancies. There were no untoward results in either case. Wenning[18] knew of a portion (1/5) of an ordinary sized placenta to be retained for a year.

Under the head of absorption of the placenta, Velpeau[19] cites the following cases: One case by Guillemeau in which the woman became pregnant in four months; one case by Planque: Naegele[20] and Solomon's[21] cases; one case by Gabillot; one case by McGlover and Porcher:[16]; one case by Morlanne; one case (Burger's) that Dubel extracted from the German journals; one case by Stoltz. He cites Ingleby as having seen small portions of the placenta be absorbed. Deubel quotes Beck as having seen the placenta absorbed after a four months' abortion. Velpeau[19] had seen four cases of absorption of the afterbirth after abortions. One of these came to autopsy some time after delivery and nothing was found in the uterus. Ramsbotham[22] reports a case where he was called in consultation to see a young woman six days after a primiparous labor, in consequence of the placenta being still retained in utero. He found the uterus painful and considerably larger than it should have been, had the cavity been empty. The os uteri was almost closed, and he could feel no part of the placenta. "She was suffering under a slight degree of fever; but there were no urgent symptoms of immediate danger." The patient was under observation for six weeks and in that time passed a portion of the placenta the size of a walnut. Ramsbotham states that Naegele[20] believed that such placentae were absorbed, and that Naegele had had four instances of the permanent retention of the whole placenta, and one instance of retention of a part of the placenta; and that Dr. Young,[21] of Edinburgh, and Prof. Solomon,[21] of Leyden, each have reported an instance in which no part of the placenta at full term ever passed away.

Dietrich[23] has reported a case of placenta accreta (or rather increta), with autopsy, that throws some light on the fate of portions of placentae that are retained for long periods of time. His patient was a 40-year-old V-para, who gave the history of having the placenta removed manually the last two times. The doctor who treated her in the last confinement, seven years previously, said that the removal of the placenta was very difficult and that a portion had to be left. Menstruation did not return. On account of her previous difficulties, the patient came into the clinic for delivery. She collapsed before the cervix was fully dilated and, after an anterior colpohysterotomy, was delivered by version and extraction. The patient died. When the uterus was removed at autopsy, there was found a perforation on the posterior wall of the fundus. The posterior wall of the uterus was almost entirely replaced by the fresh placenta and on the anterior wall there were the white indurated remains of the previous placenta which had become an integral part of the anterior uterine wall. From his study of this case and the nineteen cases of placenta accreta, he found in the German literature, he is convinced that the condition is a well defined clinical and anatomical entity.

Inquiry among physicians with whom I have come in contact convinces me that prolonged retention of a placenta, either in its entirety or of a macroscopical portion, after a full term pregnancy, is a very rare occurrence. Dr. Prentiss D. Johnston,[24] of Tazewell, Va., very kindly sent me his notes on such a case. His patient was an Hungarian woman of about thirty years, who had been delivered by a midwife. He was called thirty-six hours afterwards because the afterbirth would not come. Neither he nor a consultant were able to express it. Under anesthesia about one-third of a normal size placenta was removed manually. There were stony hard areas present which tore the end of the consultant's finger as he tried to peel off the remainder of the placenta. Failing to separate any more of the placenta, the consultant swabbed out the interior of the uterus with tincture of iodine. There was very little oozing. The lochia was less than usual. No more of the placenta passed. In less than

a year Dr. Johnston delivered the patient of a normal child without any complications.

With the idea of gaining further light upon the subject, I addressed the following questionnaire to the members of the American Gynecological Society and of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons:

"1. How many patients have you seen in whom a portion of a full term placenta has remained for a month or more?

2. What symptoms have these patient presented?

3. Do you know of a case where a portion of a full term placenta has remained within a uterus for six months or more without producing symptoms?"

One hundred and forty-three replies were received. Of these, one hundred and twelve were entirely negative. In this group were the replies of men of exceptionally wide experience such as Drs. Asa B. Davis, J. O Polak, E. P. Davis, J. Whitridge Williams and Joseph B. DeLee. Thirty-one answered question one in the affirmative, the number of cases ranging from one to many. The symptoms these patients presented varied greatly. In four instances there were no symptoms. The great majority, however, had bleeding in some form or other. The bleeding was described as continued spotting, frequent menstruation, profuse menstruation and sudden severe hemorrhages. The cases in which large portions, or the entire organ was retained, seemed to bleed less than those in which only a small portion of the placenta was retained. In the great majority of cases bleeding was the only symptom. Fever, or sepsis, was mentioned in seven answers and a vaginal discharge in six. In two instances the vaginal discharge was described as foul. Two reports mentioned subinvolution. One case had symptoms of toxemia. One complained of cramp-like pains. Four patients died, three of sepsis, and one of pulmonary embolism three weeks after a small portion of placenta was removed. One patient developed a septic endocarditis and arthritis and was in poor health at the time of the report. In a great many cases, especially where small portions of the organ were retained, fibrin formed about the placental tissue with the production of a polyp. Many of these were diagnosed submucous fibroids. When there is much foul discharge the condition may simulate malignant disease.

Three cases are mentioned as expelling the retained portion of placenta, one at seven weeks; two at ten weeks. One case in which the entire placenta was known to have been left in the uterus, apparently was absorbed. The uterus was found to be of normal size sometime afterwards, and the patient declared that she had not passed the placenta.

There was only one affirmative answer to question three, that of Dr. J. F. Percy.[25] His patient was a primipara, twenty-eight years of age. Her pregnancy was normal, as was also her delivery, except for the retention of at least one-third of the placenta. Attempts to deliver it with placental forceps and manually failed. The nurse was instructed to watch for its spontaneous delivery during the two weeks that she was on the case, but nothing was ever found. When the patient was dismissed she was told of the non-delivery of a portion of the placenta and advised that she report if anything unusual occurred, but nothing happened. She did not become pregnant the second time and passed through the menopause without incident. She was in excellent health at fifty-three years of age, when she was last heard from.

Comment

The question of prolonged retention of the placenta is of more than academic interest. Its possibilities from a medico-legal standpoint are considerable, as was shown in the celebrated case of Kitson vs. Playfair.[26] Dr. J. Clifton Edgar[27] wrote that he had testified in court in defense of a brother physician and the defense gained the point. His testimony was that such an occurrence could happen to any physician. From the standpoint of treatment one must distinguish between a placenta lying loose, but incarcerated within an irritable uterus, a placenta or portion thereof attached to the uterine wall, but having a definite line of cleavage and a placenta that is at least in part attached to the uterus with no line of cleavage (placenta accreta). An interesting case of the first class has recently been reported by Koch.[28] There is no room for any differences of opinion as to the proper treatment in such cases. The only question in the second class, when seen late is when the adherent placenta should be removed. The late Dr. Philander A. Harris[29] was emphatically against invading the uterine cavity

until the patient's pulse and respiration have been normal for several days. The only disasters he has seen follow prolonged retention of the placenta have been when this rule was not followed. In the cases of placenta accreta. Polak[30] recommends attempting the removal of the placenta only through an hysterotomy. If this be impossible the uterus should be removed. Vignes[31] did a vaginal hysterectomy in an infected case and the patient made a prompt recovery. Only in exceptional circumstances, as in Andrews'[32] case, can the placenta accreta be safely removed from below. To partially remove a placenta that has no line of cleavage favors both hemorrhage, sepsis and perforation.[33] Lehmann[34] believes that placent increta is the cause of diverticulum of the uterus. Such cases as the one he reports show the grave danger of attempting manual removal of the placenta or even a vigorous Crede maneuver. When circumstances and surroundings do not permit of following Dietrich's and Polak's suggestions of removing the placenta through an hysterotomy under the guidance of the eye, it would seem wiser not to attempt its removal at all.

Conclusion

From a search of the literature and from personal inquiry it would seem that the frequency of prolonged retention of the placenta varies in different places. In many large obstetrical clinics there have been no cases of retention of a portion of placenta for a month or more. On the other hand, some men have seen as many as fifteen or twenty cases. Curettage is very frequently an etiological factor.

Hemorrhage is the chief and often the only symptom. Some cases show evidences of infection. Occasionally there are symptoms of toxemia, and sometimes there are no symptoms whatever.

The outcome varies. There may be spontaneous expulsion, apparent absorption, the formation of polyps that may simulate submucous fibroids, or carcinoma of the body of the uterus, or death from sepsis.

References.

1. Reed, Charles B.: Adherent Placenta. *J. A. M. A.*, 38:971, 1899.
2. Brown, Bedford: Pathology of Adherent Placenta. Tr. South Surg. & Gynec. Assil., 9: 311, 1897.
3. Ross, James F. W.: Retained Placenta. *Am. J. Obst.*, 33:706, 1896.
4. Richmond, Nelson S.: Placenta Retained Four Months. *Med. Rec.*, 41:52, 1892.
5. Lamadrid, J.: Retained Placenta for Twenty-two Days After a Miscarriage of Four Months. *Med. Rec.*, 40:570, 1891.
6. Barthelemy: Un nouveau case de retention placentaire aseptique prolongee. *Rev. Medicale de L'est.* 48:420, 1920.
7. Howard, John L.: Expulsion of a Four Months' Placenta One Year After the Delivery of the Fetus *Am. Pract. & News*, 13:229, 1892.
8. Houel, E.: Retention placentaire aseptique prolongee. Bull. Soc. d'obst. et gynec. de Par, 12:290, 1923.
9. Gallant, A. Ernest: Placenta Retained in Utero One Year—Impregnation—Fetal Sac Over Os Internum—Hemorrhage as in Placenta Previa, *Med. Rec.*, 47:619, 1895.
10. Godson, Clement: Retained Placenta. *Brit. M. J.*, 1:873, 1896.
11. Wallace, James R: An Almost Full-Term Placenta Retained Over Six Weeks Without Any Bad Symptoms. *Indian M. Rec.*, 2:242, 1891.
12. Josephson, J. C.: A Case of Adherent Placenta Retained and Discharged After a Long Process of Decomposition—Recovery. *Med. Rec.*, 63:898, 1903.
13. Groat, Fannie A.: Another Case of Long Retained Placenta. *Med. Rec.*, 40:725, 1891.
14. Newman, S.: Retained Placenta of Two Years. Discharged with an Abortion at the Third Month. Tr. M. Soc., Calif., Sacramento. 1884, 141.
15. Fruhinsholz, A., and Mariot: Grosse normale developpe apparement au contact d'un placenta "en etat de retention." Bull Soc. d'obst. et de gynec. de Par. 12:324, 1923.
16. Porcher, F. Y.: Case of Retained Placenta. *Am. J. M. Sc.*, 10:391, 1832.
17. Palmer: Discussion of Dr. Schoolfield's Paper on Placentitis. *Am. J. Obst.*, 33:733, 1896.
18. Wenning: Discussion of Dr. Schoolfield's Paper on Placentitis. *Am. J. Obst.*, 33:737, 1896.
19. Velpeau, Alp. A. L. M.: A Complete Treatise on Midwifery; Translated by Charles D. Meiggs, Philadelphia, 1852, Lindsay and Blakiston, p. 589.
20. Merriman, Samuel: *London Medical Gaz.*, 3: 189, 1829.
21. Rigby, Edward: *London Med. Gaz.*, 14:334, 1834.
22. Ramsbotham, Francis H.: Principles and Practice of Obstetric Medicine and Surgery in Reference to the Process of Parturition, 1st Am. Ed. Lea & Blanchard, Philadelphia, 1842, p. 365.
23. Dietrich, H. A.: Die Placenta accreta, Ztschr f. Geburtsh. u. Gynak. 84:579, 1921-22.
24. Johnston, Prentiss D.: Personal communication.
25. Percy, J. F.: Personal communication.
26. Kitson v. Playfair and wife: *Brit. M. J.*, 1:815 and 1819, 1896. *Lancet*, 1:896, 934, 961, 969, 1041 and 1292, 1896.
27. Edgar, J. Clifton: Personal communication.
28. Koch, Ernst Ad.: Ein Fall von 114 stundiger retention der Placenta nach reifer Geburt. Zentralbl. f, Gynak. 49:1399, 1925.
29. Harris, Philander H.: Personal communication.
30. Polak, J. O., and Phelan, G. W.: Placenta Accreta, Incidence, Pathology and Management. *Surg. Gynec. Obst.*, 38:181, 1924.

31. Vignes: Retention placentaire: hysterectomie. Bull. Soc. d'obst. et de gynec. de Par. 13: 176, 1924.
32. Andrews, C. J.: Retained Placenta, Clinically Placenta Accreta. *J. A. M. A.*, 82:1780, 1924.
33. Cooper, St. Cloud: Placenta Accreta, *J. Arkansas M. Soc.*, 21:95, 1924.
Tennant, C. E., Wilson, R. E., and Craig-Sullivan, Helen: Placenta Accreta. *Colorado Medicine*, 22:145, 1925.
34. Lehmann, E.: Uber placenta accreta bzw, increta und ihre Beziehungen sur sogenannten Divertikelschwangerschaft. Monatschr. f. Geburtsh. u. Gynak. 68:201, 1925.

CLINICAL DIAGNOSIS OF DUODENO—PYLORIC ULCERS.*

By W. W. INSLEY, M. D., Christiansburg, Va.

The frequency of duodeno-pyloric ulcers, brought out in late years by Moynihan, Mayo and Codman as being as frequent as appendicitis and twice as frequent as ulcer in the body of the gastric mucosa (Codman), should direct the most careful attention of physicians to all cases of gastric disturbances.

According to Moynihan, 95 per cent of the e ulcers are located fifteen millimeters from the pylorus, with the pyloric vein as a landmark. Mayo states that it is only within the neutralizing field of the duodenal bulb that an ulcer can occur. Sippy has stated that in the absence of cancer or ulcer and their complications, real distress or pain is seldom attributable to a disordered stomach. Leon Muenier also states that no true pain referable to the stomach exists unless there is a solution of continuity of the mucous membrane.

In the past and even at present busy practitioners have failed to diagnose many of these cases. In the light of present knowledge the majority of cases can be diagnosed by the general practitioner.

Essential to a diagnosis are careful history taking and analyses of symptoms. The history usually elicited is of a gastric disorder of more or less chronicity with intervals of apparent recovery, with pain or distress when the stomach is empty, pain being relieved by taking food. It has been stated that this evidence is sufficient to diagnose a duodeno-pyloric ulcer. Leon Muenier states that this late hunger pain may occur in ulcer of the stomach proper and also in patients with gastric hyperesthesia. He calls attention to another symptom present in those patients, by means of which the lesion is definitely located. The patient during an attack of late pain is given a large glass of milk. If on taking a few mouthfuls he begins to experience relief and the relief is gradual, the lesion is in the stomach proper. If this gradual relief does not occur, the patient drinks the entire glass of milk; if the pain still persists for ten to fifteen minutes and then there is a sudden gaseous eructation, to be followed a moment later by sudden relief of all pain, the lesion is in the duodenum. This symptom was observed in all duodeno-pyloric ulcers, confirmed by operation. Analysis of this symptom by screen and X-ray showed the pylorus in spasm and nothing passing into the duodenum, with the pain still persisting. Immediately after eructation and sudden relief of pain, examination showed the duodenal bulb filled. Muenier in his procedures offers another clinical sign. Given a patient with the subjective symptoms of ulcer and the stools showing blood, he practices lavage (on an empty stomach) with 200 c.c. of water containing 2 c.c. of glacial acetic acid. Under the action of the acid the pylorus contracts, closing the stomach from the duodenum, and preventing contact of the fluid with the duodenal side of the pylorus. The crystals of haemetin always present on a fresh wound will be dissolved and detected by chemical means in this wash water should there be an ulcer in the stomach proper. Should the test for haematin be negative, the ulcer is on the duodenal side. The test for haematin is carried out by placing several c.c. of the water in a test tube with an equal volume of H_2O_2 and a 1 per cent alcoholic solution of benzidin. In the presence of haematin the fluid gradually becomes green, fading to a blue green.

The presence of blood in the stools, so-called "tarry stools," is misleading, for this occurs only in copious hemorrhage, being seldom present in duodeno-pyloric ulcers as these lesions are small, and hemorrhage is scant and intermittent. For this reason failure to detect blood does not rule out a clinical diagnosis of duodeno-pyloric ulcer. Blood may occur as free macroscopic blood, water soluble haemoglobin, or haematin (digested haemoglobin), insoluble in water but soluble in ammoniacal solution.

The topographical differentiation as to the probable source of the blood—lower bowel, rectum, duodenum or stomach—requires laboratory equipment and time not usually at the disposal of the busy practitioner, and is not essential to a clinical diagnosis. Having elic-

*Read before the Southwestern Virginia Medical Society, at Roanoke, Va., March 31, 1926.

ited the symptoms described, he can refer the patient to the roentgenologist for confirmation of the diagnosis.

SOME POINTS OF RELATIONSHIP BETWEEN THE ORTHODONTIST AND OTORHINOLOGIST.*

By W. BROADDUS MASSEY, D. D. S., Richmond, Va.

Mr. Chairman and Gentlemen: It is with a feeling of genuine pleasure that I make my maiden appearance before you—a body of nose and throat men. My subject, "Some Points of Relationship Between the Orthodontist and Otorhinologist," is one, I feel sure, that is of interest to all present, because it has to do with the problems that confront us in our daily work. The practice of orthodontia is particularly interesting and fascinating to me because it deals largely with children and is constructive and preventive.

All branches of medicine aim to prevent disease and to promote the health and happiness of the patient. Yours is the mother profession.—mine is a favored daughter and is fast growing to maturity. Since we are all working to accomplish the same end, namely, the prevention of disease and the promotion of the health and happiness of the patient, I believe we would all profit by closer co-operation and a more thorough and sympathetic understanding of each other's problems.

While I lay no claim to special skill above that of anyone else, nor am I a research man, I feel that my deep interest in this subject, to some extent, qualifies me to present this paper to you.

My paper will not present anything particularly new or original, but will try to place before you, in a definite way, some of the salient points of common interest to our respective lines of endeavor. If I can give you a somewhat general view of the subject of orthodontia and can show you what it aims to accomplish for the patient, how and when treatment should be instituted, and can arouse in you a greater interest in this important specialty, my paper will be well worth while.

Our patients, though they be well informed along other lines, know very little about the teeth and general health. When they are sick, have tooth-ache, sore throat, or crossed eyes, or see that their child's teeth are crooked and the mouth is malformed, they consult us in our respective fields. But how to prevent these ills they know very little. So this makes our responsibility all the greater. It is up to us to educate them along these lines. They usually are very credulous, so it behooves us to inform ourselves in order that we may be able to discharge this duty. I believe that in order for me to be in a position to do my patients most good, I should be able to know when they need to consult the rhinologist and physician. You, by the same token, should know when your patient needs to consult the dentist and orthodontist.

All branches of medicine and surgery are so intimately related that it is very difficult to emphasize the relationship between any two special branches. Especially is this true in the case of orthodontia and rhinology, where the relationship is so intimate and obvious that one specialty is almost essential to the other.

Nasal breathing is so important from the standpoint of general health and from the standpoint of appearance and the proper development of the dental arches that no pains should be spared in the effort to establish it. In adenoid cases, where mouth breathing has been indulged in for a long period, the arches do not develop laterally. They become narrow, the upper anterior teeth protrude, the lower jaw recedes, thus materially hampering the proper functioning of the teeth and jaws, and gives the patient a very simple and sometimes an idiotic expression. The removal of adenoids and tonsils, alone, in a great many of these cases will not suffice. The dental arches should be developed laterally, the upper teeth retracted and the lower jaw brought forward. If this is not done, the patient cannot reap the full benefit of your operation. The nasal passages have become so constricted that the establishment of nasal breathing is very difficult. And, on the other hand, the orthodontist, in his enthusiasm to widen these narrow arches, must not forget that there is a cause for the existing deformity. And it usually can be found in the form of adenoids and diseased tonsils. If these are not removed, his work cannot be successful. I fear that none of us are sufficiently careful in this matter. We are prone to see only our own field, and the patient suffers accordingly.

The otologist is sometimes consulted by patients suffering from pains in the ear. After

*Read before the Richmond Eye, Ear, Nose and Throat Society, May 18, 1926.

thorough examination of the ear and its appendages, no cause is found. Upon further examination, it may be found that impacted or partially erupted teeth are the offending members, because they do not have sufficient space to erupt in their proper places. These teeth must be sacrificed. Taken in time, sufficient space could have been provided by orthodontic measures for these teeth, thus preventing the ear pain and, incidentally, saving good teeth. Certainly such cases are not infrequent, and only by co-operation can we obtain results which will do us credit and secure relief for the patient.

At this point, for the sake of clarity, I think that it would be well for me to define some of the terms I shall use.

Orthodontia comes from two Greek words, ortho, meaning straight, and odons, meaning tooth.—hence, straight tooth. Back in the early days of this specialty, orthodontia did not mean much more than that. But today it has a broader meaning. Quoting Dr. Case: "Orthodontia is that branch of science that has for its object the correction of all dental and dento-facial malocclusions."

Malocclusion is a term that "refers not only to irregularities of the individual teeth, but also to all imperfections in facial outlines that are caused by malposition of the teeth and jaws, or that may be corrected through the medium of mechanically constructed appliances attached to the teeth."

I will not bore you with details along this line, but suffice it to say that for the purposes of teaching and discussion, malocclusions are classified according to their several types.

Sir William Osler once said: "In the whole realm of hygiene there is no one thing so important as the hygiene of the mouth." I believe that the medical world has had abundant proof of that statement. All too frequently the mother brings her child to have its teeth "straightened" for esthetic reasons only, (and I fear that the general practitioner of dentistry and medicine sometimes refers the patient to the orthodontist for the same reason). It must be borne in mind that normally developed and efficiently functioning teeth and jaws and their associated parts are great factors in mouth hygiene and, hence, general health.

I feel that it is superfluous and simply marking time for me to tell this body of men that mouth conditions have a very marked influence on the general health. You know that. However, there is one particular mouth or gum disease, pyorrhea, that is blamed for many ills far removed from the oral cavity. Now, one of the recognized causes of pyorrhea is known to be traumatic occlusion. When teeth are irregular and malposed, the normal force of the teeth one upon the other is destroyed. Some teeth receive too much force, causing trauma, thus predisposing the mouth to pyorrhea, and the individual so affected to all of the ills that follow in its train. Orthodontic measures instituted at the right time could prevent this traumatic occlusion, and thus save the patient much suffering and many teeth, in addition to giving him the satisfaction and comfort of possessing a good set of teeth and jaws. Teeth that are crowded and irregular in alignment are difficult to clean, and are thus more susceptible to decay. Then some teeth cannot function normally and sometimes not at all, thus laying them liable to the penalty that Nature inflicts on all organs and parts of the body that are not used.

I have touched on mouth breathing briefly, but as this is a matter of great concern both to the rhinologist and the orthodontist, the field in which we are both vitally interested, it might be well for me to have something to say about the causes and effects.

Causes.—It is common knowledge that nasal and pharyngeal infections and sometimes deflected septa so obstruct the nasal passages that it is often difficult and frequently impossible for the one so affected to breathe through the nose. Nasal obstruction is not often complete in the young subject during the day when in the erect posture, but is more often intermittent and partial. It is at night, when the child is asleep, that obstruction occurs, thus causing mouth breathing during the night only. This accounts for the fact that many mothers will declare to you that her child is not a mouth breather, when you know beyond doubt that she is mistaken. The evidence is written all over the child's face. This also accounts for the fact that the rhinologist and orthodontist do not see many of these children before nose and throat conditions are alarming and the jaws badly deformed.

Effects.—Sometimes the effects of mouth breathing develop so slowly and insidiously that this cause of poor physique does not re-

ceive the attention it deserves, in spite of its frequent occurrence.

The mouth breather of long duration has a thin, narrow, and poorly developed nose, is susceptible to headache, catarrhal conditions, deafness, sore throat, laryngitis, and the obvious detrimental effects on the chest. This flattening of the chest with its shallow breathing and want of expansion of the lungs, with frequent and prolonged colds, is undoubtedly a predisposing cause of bronchitis and pulmonary tuberculosis.

It is difficult to say just how much this condition affects the mental development, but the open mouth, sunken chest and occasional hardness of hearing and blankness of expression, does give the impression of a lack of intelligence and alertness.

It is in this field particularly that the rhinologist and orthodontist can combine forces and work together for the health and happiness of the patient. The type of deformity associated with mouth breathing becomes definite between the ages of five and six. Even earlier than this it is possible to determine whether or not the jaws are expanding, by the spaces between the temporary teeth. I will show models illustrating this point.

Too frequently the parents are advised by the dentist and physician to wait until the permanent teeth erupt before trying to "straighten" them. They say, "maybe they will come in straight." If the jaws are not sufficiently developed to accommodate the permanent teeth, which are larger than the temporary ones, this is impossible. You might as well say, wait until the patient is about to die—then call the doctor, or wait until the child is horribly deformed, then treat. By the time a child is five years old there should be large spaces between all the six anterior teeth. If these spaces are not present by that time, they never will be unless the jaws are expanded by orthodontic measures. Therefore, the teeth are obliged to erupt out of line. It is because of the failure of those responsible for early diagnoses in these cases that we see so many squirrel faced people and so many chinless monstrosities walking the streets every day. You start a child's moral and mental training when he is young, when his mind is plastic, when he is growing. The time to treat any deformity is when the patient is young and the bones are plastic and growing. As you know, the maxillary bones and mandible form the frame work for most of the face. Teeth can be straightened successfully in the adult mouth, but when the malocclusion is so extensive as to cause a great deformity in the facial outline, the latter cannot be overcome altogether, because the face is fully developed. But by recognizing these cases early and removing nasal and pharyngeal obstructions, and, when jaws are narrow and otherwise malformed, by instituting early orthodontic treatment, we can be a credit to our profession by preventing disease and contributing to the health and happiness of God's little ones.

Medical Arts Building.

DYSTROPHY OF THE ENDOCRINE GLANDS IN RELATION TO THE EYES.*

By ROBERT SCOTT LAMB, M. D., Washington, D. C.

This subject is replete with facts obtained from results of the administration of endocrine substances, of such startling nature as to cause unbelief in the minds of those treating their cases in routine manner by other methods. And it is only by careful comparative observations of results obtained by different methods used in the treatment of ocular conditions, with which you are all familiar, that I have been able to decide the advantage of the additional use of endocrine substances in their treatment.

Did time permit, I should be glad to go back thirty years, to the methods I then saw used by one, now dead, of the better known oculists of this country, for it would by contrast show how markedly knowledge of the causation of ocular diseases and changes in treatment proportionate have increased and improved, to the end that many affections then considered hopelessly incurable are now quite cured by present-day drugs and methods of treatment.

What are the endocrine substances most potent in the treatment of ocular diseases? Thyroid, the true hormone and posterior pituitary. Why? Because they control in large measure the metabolism of the body. All the other endocrine substances can be used in conjunction, as indicated, but these two are sheet anchors. Undoubtedly, more is known about the thyroid than any other of the endocrine organs, but of late much has been done biologically and physiologically in the study of all the

*Read before the Medical Society of the District of Columbia, at Washington, April 28, 1926.

endocrine glands, and, also, much has been published regarding them. However, there is much more to be done to positively establish some of the facts presented and believed to be true. To date, we know, without peradventure, that thyroid glands secrete and send through the system a true hormone; the gonads also are believed to do so, but other glands secrete chemical substances which do not entirely comply with the requirements or specifications for nominating them hormones. Such substances are pituitrin and adrenin. Therefore, postulations in advertisements of certain manufacturers of compounds of endocrine substances are impossible of proof at present, and such substances should not be used.

You all know that the immediate activation of the secreting structures of the endocrine glands is *via* the autonomic nervous system, and must always be considered when prescribing such gland substances.

What you are most interested in is the practical usefulness of endocrine substances in the treatment and cure of ocular diseases. But, before telling of that, I must ask you to consider with me, to some extent at least, the causes underlying the diseases and the *modus operandi* of their occurrence. Our first consideration is resistance, either local or individual, for most persons are somewhat imbalanced as to their endocrine organs, which imbalance varies also at different periods during the life of each individual. Through circulatory anomalies or injuries, local areas may be more vulnerable and so predispose the individual to attack by mechanical, chemical, or bacteriological substances. Whether or not, in our present problems, eye-strains incident to improper lighting conditions or improper corrections for errors of the symmetry in the eyeballs may be properly considered an injury, I submit to your individual minds. If the resistance were at all times good, there would be, as you all know, little need for our services.

How important it is, then, that, in our attempt to cure ocular diseases, we should get all the help we can by using means to increase the resistance of the individual and the local area, while giving and using local drugs and measures to combat the particular affection present. This brings the crux, for herein lies what I believe to be the only difference in my own method of attacking the problem of the treatment of ocular diseases, pursued for fifteen years, and methods used by my colleagues, viz., that I have endeavored to ascertain what were the endocrine deficiencies in any individual case, and to supply by mouth the substance from similar substances from the lower animals. The first thing to be established was, what ocular symptoms or conditions followed the known disorder or deficiency in some known gland. As there was no data to turn to for guidance, all observations had to be original. Although I have elsewhere published some findings in regard to the endocrine disorders and their effects on the eyes, it has been impossible to gather together and publish the facts observed in connection with this work, and I can, therefore, only ask your kindly consideration of what I have to tell you. These results are the epitomized conclusions after years of study and contemplation regarding thousands of careful observations.

Have you noticed in myxedematous cases that the lids were thickened, the eyebrows and lashes few, that there is a marked intumescence of the conjunctiva, with somewhat the look to the cornea of a fish out of water? If you have, you will probably recall many other cases where these conditions were less marked. If you have not done so, you will doubtless begin, for these are cases needing thyroid. Have you noticed pale, light-haired, nystagmic children with marked disturbance in the pigment distribution of the fundi? They need posterior pituitary; so, also, do other persons with disturbances of pigment of lesser degree, whether of anatomic or pathologic origin.

You ask, in what kind of cases should thyroid be used? And I give you a long series, having a good reason, or several good reasons, in each instance for its use, viz., glaucoma, corneal ulceration, interstitial or parenchymatous keratitis in pannus, vascularization of the cornea, in lens opacities and incipient cataract, in keratoconus, nodular keratitis or in keratomalacia, in vitreous haze and opacities, in angiosclerosis of the retina and choroid, in hemorrhagic retinitis or chorioretinitis, and in edema of the nerve and retina. Why? Because thyroid increases the metabolic rate and improves nutrition. I could give you case report on case report to substantiate the foregoing statement —cases of a character similar to many handled by other and previous methods,—and I can

positively assert that by none have I had such rapid progress as has been obtained by the method I am suggesting for your use.

Let me pause for a moment to cite a few cases. On returning from a meeting of the American Academy in September of last year, I found a case of extensive onyx or abscess of the left cornea, with a left-sided trifacial paralysis, who had seen several oculists, with a prognosis for the removal of the eye. After desiccating the corneal anterior layers including the abscess, the patient was given thyroid, five grains, and lactate of calcium, five grains, three times daily; while locally, atropin, one per cent, and dionin, five per cent were used three times daily. She has now entirely recovered from her paralysis and her vision is restored to normal. Another case of abscess of the right cornea has had similar treatment with like result. A case of gonorrheal ophthalmia, with perforating ulcer of the right cornea was similarly treated, after controlling the infection, with a continuing absorption of the scar; although as yet there is still a central leukoma with anterior synechia, there is vision and a gradual improvement in it. Two children of different families, with recurrent phlyctenular keratitis, each of whom had been treated over a period of two years by several oculists when seen, were on a regulated diet and had been confined to dark rooms; they could not see to play outdoors. With atropin and dionin locally, and one-tenth grain thyroid and two grains of lactate of calcium internally three times daily, having also unlimited diet, they were within two weeks with dark glasses playing outdoors with children of the neighborhood. So, also, with numerous similar cases of less severe type. Time does not permit me to cite cases of each of the diseases mentioned above, although endocrine substances, including suprarenalin and gonadal substances, were used in all with excellent results. And, whereas I cannot here go into a discussion of the causative factors of glaucoma, I can assure you that with a half grain thyroid and five grains of lactate of calcium, together with local drops of pilocarpin and dionin, as indicated by me in 1913, I have found no need to operate on any of the cases in all these years. I have, however, thonght best in consultation, because of the ocular state present, to advise operation, knowing, as I did, I could not control the case myself.

Axiomatically, all symptoms of dystrophy are not present in any given case, and only a careful and exhaustive history taking will elicit symptoms which help in making a diagnosis, thereby leading to the idenity of the culprit gland or glands and the administration of substitute therapy.

I would not have any one blindly follow my prescriptions in this work, but would rather that each one study the subject and, with the knowledge he acquires thereby, undertake to control his cases with the additional means at his disposal. He will thus find his results better and much easier to obtain than by any method formerly known to him. It is always pleasurable to be able to exponnd the subject near to one's heart to a group of persons interested. I thank you all for such an opportunity as I have just had. I hope the discussion will bring forth other information that, for lack of time, I have been unable to present to you.

204 *Stoneleigh Court.*

FEEDING THE NORMAL INFANT THE FIRST YEAR.*

By THOMAS D. JONES, M. D., Richmond, Va.

Preventive medicine is occupying a constantly widening field in general medical practice, as well as in the various specialties, and there is probably no period of life in which the application of such principles will yield richer rewards than the first year of the infant's life. Through studies of the physiology and chemistry of the infant's digestion a better understanding of the subject of infant feeding has been reached and the problem has been greatly improved. If we keep in mind the requirements of the normal infant during this period, with a clear conception of normal growth and development, a great deal can be done toward reducing the morbidity and mortality in later infancy and early childhood. However, we have to admit that in spite of the work that has been done in simplifying infant feeding in the past few years, the fact still remains that there is no *perfect* infant food. We are all familiar with the fact that breast milk more nearly approaches perfection than any other infant food of which we have knowledge. Such a condition as an idiosyncrasy for breast milk is denied by some good authorities. Yet we cannot get away

*Read before the Manchester Medical Society, April 6, 1926.

from the fact that we do occasionally see infants failing to thrive on an adequate supply of breast milk which, so far as can be determined, is normal in composition, that will do perfectly well on some artificial food. Such cases, however, are rare, and the importance of breast feeding in early infancy cannot be over stressed. In a summary of a review of the literature on infant feeding in 1924, Dr. Rudolph Moffitt states that "Richardson has been able to prove by statistics that the breast fed baby has five times the best chance for life and health as the artificially fed baby." It is, therefore, incumbent upon both the pediatrician and the obstetrician to utilize all of their resources in establishing and maintaining breast feeding whenever it is possible.

Aside from the rare idiosyncrasy that the infant may manifest for breast milk, there is probably only one positive contraindication to breast feeding, namely, active tuberculosis. Sedwick and Wyman state that where the lesions are healed, there is, from the infant's standpoint, no objection to nursing, the manner in which the mother's strength holds up being the only consideration when nursing is permitted. Pregnancy has been considered by a great many authorities as a contra-indication for breast feeding, but it has been shown by Schloss that the supply and composition of the milk of cattle is not influenced by pregnancy during the first half of the lactating period, but that after that period there may be a reduction in quantity, but the quality is unchanged. Lactation has been observed as an almost continuous state in some mothers who give birth to babies with great frequency, and no ill effects have been recorded on the infants nursing these mothers. No other accurate observations have been recorded in pregnant nursing women. Sedwick and Wyman further state that in epilepsy and insanity the only determining factor is the possibility of the mother injuring the infant during an irresponsible period. The composition of the milk in these conditions remains normal. Nephritis and puerperal convulsions are indications for temporarily discontinuing breast feeding, but, so far as the infant is concerned, do not justify a permanent discontinuance. Malignancy apparently does not influence the quality of the milk, and is no contraindication so far as the infant is concerned. Syphilis in the child or mother is no contra-indication unless it has been acquired since birth, but to the contrary should be kept up if possible, as the syphilitic baby tolerates artificial foods poorly. In such severe acute infections as pneumonia and typhoid fever, it may be necessary to discontinue nursing temporarily, in order to conserve the mother's strength, but no harmful results ensue so far as the infant is concerned, except from the lessened supply, the fact being well established that no toxins are transmitted through the milk under such conditions.

How are we to determine whether the infant is getting an adequate supply of breast milk which is normal in composition? This question is sometimes hard to answer. The matter of quality, however, is seldom a cause; furthermore, qualitative examinations of breast milk give little dependable information. If it were possible to completely empty the breast at regular intervals for a twenty-four hour period, and get an analysis of a portion of the total twenty-four hour output, we might obtain information of some value, but even then there is room for error, as there is no known method of emptying the breast as satisfactorily by artificial means as the nursing infant. An analysis of a single expression of breast milk is wholly undependable, as the output may vary at different periods of the day, and various portions of a single output will vary. The first stripping is high in sugar and low in fat, the last stripping being just the opposite. Quantitative tests are dependable when the infant is weighed before and after each nursing for a twenty-four hour period, but obviously not for a single nursing, as the quantity may show marked variation at different periods of the day. It follows, therefore, that the most reliable practical guide is the condition of the infant. Is the weight satisfactory? Is there vomiting? Does the infant cry a great deal? Is sleep satisfactory? Is there constipation or diarrhoea? The next question to answer is, is the disturbance a fault of the infant or is it the food? It requires a careful study and thorough physical examination of the infant to be able to decide this point. Failure to gain weight and constipation usually mean an inadequate quantity, if there is no vomiting. Loose, green, watery, acid stools with excoriation of the buttock, usually means a sugar disturbance and can frequently be corrected in the breast fed baby by

discarding about an ounce of the first portion of the breast milk, and substituting a like amont of protein milk solution sweetened with saccharin. Soapy, rancid smelling, acid stools, producing either constipation or diarrhoea, usually means too much fat or an intolerance for fat on the part of the infant, and may frequently be corrected by limiting the duration of breast nursing, and giving a complemental feeding of a protein and carbohydrate mixture, care being taken to completely empty the breast by manual means if necessary after each nursing.

The next question is, where there are evidences of an inadequate supply, what can be done to increase it? After a thorough review of the literature, and a close study of his own cases, Donelly reached the conclusion that there are only three measures on the part of the mother to be considered which favorably affect the supply: 1st,—plenty of rest; 2nd,—moderate amount of exercise, never to the point of fatigue, with plenty of fresh air; 3rd,—a generous diet consisting of a general variety of food but no one particular food. All authorities are apparently in agreement on the favorable effect upon lactation of regular nursing, so that when the supply is inadequate it is better to allow the infant to nurse each breast for ten or twelve minutes, and then give a complemental feeding rather than to give a supplemental feeding. Such measures will frequently establish an adequate supply of breast milk and the complemental feeding may be left off entirely later on.

Many medicinal agents have been heralded from time to time as having specific galactagogue properties, but there seems to be no definite proof of any drug having any effect upon the mammary secretion. McKenzie, Hammond, Ott and others have thoroughly investigated the influence of pituitary extract and corpus luteum, and they all agree that there is a temporary increase in milk following their administration, but that the effects never last more than twenty-four hours, often not more than ten minutes, and that a diminution usually follows, so that the average is not increased. Such tissue extracts as placenta, fetus, adrenals, thyroids, ovaries, etc., have been employed with widely varying results, but most workers are agreed that there is as yet no definite proof of any effect upon the mammary secretions from the adminstration of any of these substances. It is also important to note that there seems to be no evidence to show that the intake of large quantities of fluid has anything to do with increasing the milk supply, although the method is still extensively used.

When should the infant first be put to the breast? There seem to be some widely varying opinions from many good authorities concerning this point; for instance, Talbott and Morse recommend from six to twelve hours after birth, and every six hours the next day and every four hours the third day, and shorter intervals thereafter. Czerny advises not at all on the first day, once on the second day, twice on the third day, then increasing one feeding each day, until the infant receives five feedings during the twenty-four hour period. Feer recommends leaving off until the child evidences hunger, and states that this is seldom manifested under twenty-four or forty-eight hours.

Should water be given the first few days? This practice seems generally recommended. Sedwick and Wyman studied a group of seven hundred infants with reference to this point, one-half of whom were given water *ad libitum* after nursing starting sixteen hours after birth, the other half receiving nothing except what was obtained from the breast. The average initial weight loss was the same in both groups, no difference in temperature was noticed, and inanition or dehydration fever occurred with just as much frequency and severity in one group as the other; however, no detrimental effects have been reported by any observers from giving water in the first few days. Bachman, of Chicago, tried out the effect of giving complemental feedings to the newly born as a means of preventing the initial weight loss for the first three or four days. They were all offered 60 c.c. of various formulae after each nursing, some receiving Ringer's solution with 5 per cent glucose added, some Ringer's solution with 10 per cent glucose added, some albumen milk with dextri-maltose added, some receiving whole milk dilutions with dextri-maltose added, and others receiving condensed milk solutions. He found the average weight loss in those receiving complemental feedings was 5 per cent of body weight against the generally accepted 9 per cent loss in the control group. No definite conclusions were reached as to the best type of food to use as a complemental feeding.

Though the best results seemed to be obtained in those receiving formulae with relatively high sugar content, he believes that complemental feedings for the first few days are a perfectly legitimate practice. It would seem that the practice of giving the breast twelve hours after birth, if the mother's condition is good, and then every six hours for forty-eight hours, and shorter intervals thereafter, with water *ad libitum* between feedings but not too close to nursing time, would apparently about strike a middle ground and would be a safe practice to follow in the majority of cases.

Artificial Feeding

When for any reason we absolutely have to decide in favor of artificial feeding, at least five general principles have to be borne in mind in order to prescribe a formula intelligently: 1st, Caloric requirements; 2nd, Intervals between feedings; 3rd, Fluid requirements; 4th, Proper food elements; and, 5th. Digestibility of food.

Caloric Requirements.—A normal baby under six months of age will require from forty to fifty-five calories per pound, per body weight, each day. An infant will rarely gain on less than forty calories per pound, and it is not good practice to exceed fifty-five, although many babies may, for a while, take more without any apparent untoward effect. but continued over-feeding almost invariably leads to trouble. Premature or athreptic babies, of course, require higher caloric intakes, but this paper only deals with feeding normal infants.

Intervals Between Feedings.—There seems to be a great diversity of opinion as to the intervals between feedings among equally good authorities. We find some good authorities still recommending the two hour interval, and others three and four hour intervals. Brennaman states, in a recent article, that the fact that such differences of opinion can exist among equally experienced and equally succesful clinicians, can admit of only one explanation,—"that the baby can be fed every two hours, every three hours, or every four hours, with nearly equal success," and that "most of us follow the old path from habit rather than try a new one." The practice of following the three hour schedule with seven feedings during the twenty-four hour period,—that is, at six, nine, twelve, three, six, nine and two A. M.,—and leaving off the two A. M. feeding at the end of the third, or fourth month, and adopting the four hour schedule by the end of the fourth or fifth month, with five feedings daily thereafter, proves satisfactory in the great majority of cases.

Fluid Requirements.—The average bottle baby receiving cow's milk dilutions rarely actually needs additional water, although the practice of giving water between feedings is not harmful unless it is given too close to feeding time. Many breast fed babies, however, actually *need* water between feedings, as the amount of fluid obtained from the breast is usually smaller than the artificially fed baby receives with the average milk dilution. The fluid requirement is greater in hot weather than in cold weather, for obvious reasons. If in making up a formula we wish to provide adequately for the fluid requirements, which is the usual practice, we usually provide from two and one-half to three ounces per pound per body weight each day. The rule that is often followed of giving one or two ounces more than the age in months at each feeding with a minimum of three ounces, and a maximum of eight ounces, is a fairly safe rule to follow in the majority of cases.

Proper Food Element.—Under this head we have to consider fats, carbohydrates, protein, mineral salts and vitamines.

Fats.—The exact role of fat is not absolutely established. It is known to have a definite influence on mineral metabolism, especially calcium, is of value in saving protein waste, and also contains fat soluble A vitamine, and promotes growth. It may, however, be left out of the infant's diet for a longer period than either proteins or carbohydrates. The reason for the difference in the digestibility of the fat of cow's milk and mother's milk is not clearly understood. Cow's milk is known to contain a much greater proportion of volatile fatty acids than the fat of breast milk. The oleic acid content is much higher in breast milk. There is also a difference in the size of the fat globule. Brennaman does not believe that the great difference in the infant's ability to digest the fats is due entirely to these differences, but believes that the medium in which they are held is the determining factor. It is known too that a larger amount of fat may be given in boiled milk than in raw milk. The percentage of fat that can usually be given the normal infant in a formula will vary from

1 to 4 per cent, although the latter percentage can rarely be reached before the end of the first year. When fat intolerance is once established in the infant, it is very hard to overcome, so that the danger of giving too high percentage of fat in the formula should be constantly borne in mind, and it is always wise to test the infant's tolerance for fats with low percentages at first, and very gradually work up.

Carbohydrates.—Carbohydrates, like fat, supply energy, increase weight, spare protein, and may entirely replace fats for a short time. They are also important in the oxidation of fats and promote water retention. They can, therefore, furnish the needed calories when the fat and protein intake are inadequate. The importance of this element in the infant's diet is indicated by the large proportion of sugar which the mother's milk contains. The half and half mixtures of milk dilutions reduce the sugar content to 2 per cent so that it is necessary to make up at least a part of this deficiency by adding some form of sugar to the formula. For this purpose dextri-maltose and corn syrup are perhaps the most extensively used at this time. Cane sugar, milk sugar, or Mellin's food may also be used with equally as good results in most cases. It is best to begin with a small amount at first—about one-half ounce to the day's formula—and gradually work up to the required amount, although sugar intolerance can be more quickly corrected than is the case with fats. DeSanctis recommends the addition of one ounce of sugar to the formula of an infant weighing under ten pounds and one and one-half ounces for those weighing over ten pounds. The rule followed in some of the European clinics is to give one one-hundredth of the infant's weight in sugar for a twenty-four hour period; either rule, however, seems fairly safe to follow in feeding the average normal infant.

Protein.—Protein serves the purpose of repairing the wear and tear, and promoting cell growth, and may also be a source of energy. A larger percentage is required in modified cow's milk than occurs in breast milk, about one and five-tenths gms. per kilo of body weight being apparently all that is required in breast fed babies. But in artificially fed babies this amount has to be greatly increased. Griffith states that 7 per cent of the caloric intake should be given in the form of protein. The probable reason for the necessary increase of protein in cow's milk dilutions is the relatively low lactalbumen content of cow's milk which is only about one-fifth of the protein content, whereas in breast milk it comprises about two-thirds of the protein content.

Mineral Salts.—All of the mineral salts are present in sufficient quantities, even in cow's milk dilutions, except iron, and there is usually enough surplus iron stored up in the liver of a full term baby to meet the demands for the first six months of life, so that the addition of these elements to the formula rarely has to be considered in the first six months of life.

Vitamines.—A recognition of the existence of the food accessories, known as vitamines, in the past few years, has resulted in the selection of foods from a new angle, and, because of the limited variety of foods which the infant receives, is a much more important factor in the consideration of the infant's diet than is the case with the adult. Funk first coined the name for the substance which he believed curative for beriberi in 1911. Hopkins and others had reached the conclusion much earlier that the growth of laboratory animals was dependent upon something in the food that could not be accounted for in the ordinary nutrients, and called these hypothetical substances "accessory food factors." Funk's work showed that the curative substance of beriberi was abundantly found in Brewer's yeast. He was able to obtain from yeast a crystalline substance, which contained nitrogen, and believed that this substance belonged to the class of chemical substances called amines, and that its absence meant death, and its presence life. This belief was responsible for the present nomenclature. These substances, however, were later shown to be complexes of the curative substance, combined with adulterants. It is, therefore, not definitely known at this time whether or not they are amines at all. McCullom holds that they should be called "unidentified dietary factors.'

This problem had already engaged the attention of other investigators, notably Eijman, Stepp, Suzuki and his co-workers, resulting in the expression of a great variety of views and a great deal of controversy, which finally resulted in bringing to light some hitherto unknown facts, which have proved a brilliant contribution to the study of nutritional diseases.

The existence of three vitamines or food accessories—A, B, C,—have seemed definitely established for several years; more recently D and E have been adopted by many of the workers in this field.

Fat soluble A, which is abundantly found in cod-liver oil, butter, cabbage, carrots, sweet potatoes, spinach, egg yolk, and to a lesser degree in many other foodstuffs, seems to be an important factor in the promotion of growth. Its deficiency is known to produce two affections of the eye, known as xerophthalmia, and keratomalacia. Attempts have been made to associate this substance with rickets, but definite conclusions on this point have not been reached.

Water soluble B, which is abundantly found in milk, yeast, vegetables, orange juice, the husks of grain, and is present to some extent in most foods, because of the wide range of its source, is seldom if ever a problem in infant feeding. Its absence, however, is known to cause beriberi; and the polyneuritis of birds and animals is due to a deficiency of this substance.

Water soluble C is present in all citrus fruits, being most abundantly found in oranges, lemons, raw cabbage, lettuce, peas and spinach. Milk contains only a small quantity, the quantity being dependent to some extent upon the food of the mother or cow. It is rapidly absorbed by slow heat and to a lesser extent by rapid heat. Its deficiency will cause scurvy, which is one of the most frequent conditions seen in infants to result from a vitamine deficiency. It follows, therefore, that an additional supply of this antiscorbutic substance has to be furnished in feeding the infant, because of the effect of pasteurization and boiling of milk on this vitamine, and it deserves more attention in the artificially fed infant than is the case with the breast fed baby. Its administration is generally recommended by the end of the second month, usually in the form of orange juice, beginning with one teaspoonful and gradually increasing to as much as two or three ounces by the end of the fourth month. It is probably best given between feedings, preferably about one hour before the second bottle, and it may be sweetened diluted with water, or given straight. Tomato juice apparently answers the same purpose, and may be given in the same manner. Some of the European clinics report equally as good results from the administration of yellow turnip juice.

Vitamine D.—The anti-rachitic property of cod-liver oil is generally believed to be due to its vitamine D content, and should probably be considered as a necessary element of the infant's diet, although the results of a very careful study of the effects of the administration of cod-liver oil on the control and prevention of rickets in 210 cases of infants, recently carried out by Dr. May G. Wilson at the New York Nursery and Child's Hospital, would indicate that this agent is not as potent as an anti-rachitic factor as has been generally believed. The results were briefly as follows: Of the 210 cases studied, 132 received cod-liver oil; 52 per cent showed clinical evidences of rickets at three months, and 66 per cent at four months. X-ray studies revealed rickets in 63 per cent of the cases at three months, and 77 per cent at four months. In the control cases there were clinical evidences in 56 per cent of the cases at three months and 89 per cent at four months. X-ray evidences were found in 73 per cent at three months, and 93 per cent at four months. Those receiving cod-liver oil showed evidence of healing by the end of the fifth month, while evidence of healing was delayed in the control group until the end of the seventh month. At from nine to fifteen months, the X-ray showed evidence of healing in nearly all of both groups. The conclusions reached were that cod-liver oil was of more value as a control than in the prevention of rickets. Some investigators, Hess, for instance, express serious doubts as to whether rickets is actually a food deficiency disease or not. Further studies, similar to those carried out by Wilson, will perhaps shed additional light on the subject; however, with the present knowledge of the problem, the routine administration of cod-liver oil to all young infants is probably a justifiable practice. Most infants will take it perfectly well, without the slightest disturbance. The dosage has apparently never been standardized. Bartlett believes that half a dram daily is sufficient as a preventive, and give this amount at one dose, preferably just before the night feeding. In the cases studied by Wilson, there did not seem to be any relation between the degree of rickets observed and the amount of cod-liver oil given; these cases received daily dosages of from one-half to four drams.

Digestibility of Artificial Foods.—If the foregoing principles are adhered to, the average normal baby can digest a formula that is worked out on such a basis. However, a brief discussion of a few points in connection with this phase of the subject might not be out of place at this time. It is generally conceded that the advantage of boiled milk justifies the practice as a routine measure in infant feeding. There seem to be some very strong points in favor of this practice; the curds are rendered much smaller, and it has been shown that a larger percentage of fat can be given than in raw milk, and what is probably still more important, boiling renders it bacteriologically safe. The effect on the anti-scorbutic vitamine (which is not entirely settled) can be easily corrected by the administration of orange juice. One of the popular objections is its constipating effect. Brennaman states that "the baby that is fed on cow's milk, either raw or boiled, and is reasonably constipated, is digesting its milk perfectly and that it is far more correct to say that raw milk is more laxative, because it is more indigestible." Morse and Talbott state that the heating of milk unquestionably predisposes to constipation, but only to a slight extent, and it is a far less common cause of constipation than is ordinarily supposed. Dunn expresses similar views, but goes further and says that such a claim has never actually been proved. The addition of cereal water, such as barley, has been shown to render the curds smaller, and may at times be used to advantage. The addition of alkalies, such as lime water, sodium citrate, sodium bicarbonate, and milk of magnesia, has been extensively employed, and apparently has a definite effect on the coagulation of casein, but is not very extensively used at this time. The more recent practice of adding lactic acid to cow's milk is apparently the most popular measure used in improving the digestibility of cow's milk at this time, and is a routine procedure in many clinics. There is apparently no argument against such a practice.

Other Foods During the First Year

Cereals may be given in most cases at six months, and often earlier. The practice that is most often followed is to begin giving it with the 10 A. M. bottle. It is best to start with small quantities, about two teaspoonfuls, pouring a little of the formula over it, and then giving the remainder of the formula afterwards. This may be gradually increased to two or three ounces by the end of two or three weeks, after which time it may be given twice daily. The second feeding may be given with the 6 P. M. bottle. The choice of cereal is apparently unimportant. Barley jelly is probably the most easily digested and is perhaps the safest to start with. It is made by adding one ounce of barley flour to twelve ounces of water and cooking for thirty minutes. Cream of wheat, properly cooked, and later, oat meal, are perhaps the most widely used, and it is a good plan to change from one to the other. By the end of the sixth month, broths or green vegetable juices, that is, the liquor from almost any green vegetable except cabbage, should be added. It may be given over stale bread, zwieback, or well-cooked rice at the 2 o'clock feeding, giving the bottle afterwards. Finely minced vegetables, such as turnip greens, spinach, or string beans, may be added a little later. Carrots, apple sauce or baked apples, baked or mashed potatoes, cauliflower, minced ripe banana, stewed prune pulp, pudding of rice, bread or tapioca, may be given with safety toward the end of the first year. In a recent very interesting article by Brennaman on this subject, he states that "his tendency for years has been to slide the whole sequence of additional foods farther and farther down the scale of months, always only because the baby seems to do better if he begins still earlier than he did before." He begins cereals at the fifth month and often earlier.

There is still a great deal left unsaid on the subject of feeding the normal infant the first year, but the chief purpose of this paper is to point out as briefly as possible the chief essentials that are to be borne in mind in taking care of the infant's nutrition the first year of its life.

Medical Arts Building.

NON-OPERATIVE TREATMENT OF CHRONIC OTITIS MEDIA SUPPURATIVE.*

By JAMES R. GORMAN, M. D., Lynchburg, Va.

In the consideration of the non-operative treatment of otitis media chronic suppurative, it is first necessary to mention the two general groups into which it may be divided:

*Read before the Virginia Society of Oto-Laryngology and Ophthalmology, in Petersburg, April 27, 1926.

First. Those cases in which the diseased process has invaded the temporal bone, in which type of case conservative treatment will not be sufficient to effect a cure.

Second. Those cases which it is the purpose of this paper to consider, namely, the cases in which the diseased process is limited to the mucous membrane of the middle ear and Eustachian tube, and in which there is no involvement of the temporal bone.

In a discussion of this type, it is necessary to take up the etiology of otitis media chronic suppurative. The primary cause of any case of chronic otorrhea, in my opinion, is traceable to improper handling or neglect, either by the patient, his family, or his physician, of an otitis media acute suppurative, exclusive of all other causes. I say this without consideration of the predisposing or active cause of the acute process. Practically one hundred per cent of the acute abscesses of the middle ear are caused by extension through, or by blockage of, the Eustachian tube by infections occurring with the acute exanthemata, infected tonsils or adenoids or both, acute and chronic nasal accessory sinus infection, acute naso-pharyngitis, acute tonsillitis, influenza, pneumonia, typhoid fever or any of the many ills of mankind which may cause more or less congestion in the naso-pharynx. Practically every case of chronic otorrhea has as its etiological factor a preceding acute otitis media suppurative, except those extremely rare cases of tubercular, or specific, or malignant involvement of the middle ear and mastoid. I make these statements because I wish to make the plea that, after all, the best treatment for chronic otorrhea lies in its prevention by proper handling of the case before it has become chronic. I doubt very much that anyone will dispute the statement that any case, which has gone on to a chronic running ear, could not have been prevented if properly handled during the acute process, either by early incision of the drum membrane, or by operation for the acute mastoid, which must have complicated such a case. The prevention of acute otitis media plays a vastly important part in the prevention of chronic otorrhea. By proper care of the nose, naso-pharynx, and throat during and after the acute conditions, which are the active causes of acute otitis, we have seen many acute abscesses prevented.

The usual picture presented is an acute naso-pharyngeal infection. The patient complains of stuffiness of the ears and possibly slight pain in ear. The ear drum may be, and often is, considerably reddened. The redness may be limited to the handle of the malleus. By shrinking the nose and mouth of the Eustachian tube at this stage and the application of silver nitrate solution, from 3 to 12 per cent in strength, and occasionally even gentle inflation, we have undoubtedly in many instances interrupted a process which, if allowed to go unattended, would have unquestionably resulted in an acute otitis media suppurative. We supplement this care by the use of astringent antiseptic drops in the nose, and oily astringent nasal sprays. The two drugs we have used with most success for this purpose have been one to five thousand aqueous solution of metaphen as nasal drops and chloretone inhalant, as a nasal spray. We use this in all acute nasal and naso-pharyngeal infections. This is especially efficacious in the acute exanthemata in preventing disturbances in the ears during these acute conditions. A chronic ear will simply not occur if the acute process is properly handled, except in those extremely rare cases resulting from tubercular, specific, and malignant affections.

A chronic otorrhea develops from the acute process as the result of improper drainage of the middle ear, usually resulting from delayed or inadequate incision of the drum membrane. It is a fact that the vast majority of acute ears, opened early and properly, will be sufficiently drained to effect recovery, but when the ear has been allowed to go long enough to rupture spontaneously, or incision is delayed to a point where the mastoid has become involved before incision is done, then frequently drainage from simple incision is not sufficient to take care of the situation. An acute ear which discharges freely longer than from two to three weeks has almost certainly resulted in an acute mastoid. A simple mastoid on an ear which continues to discharge copiously for this period of time is, in my opinion, conservative treatment, and simply provides sufficient drainage for the middle ear to recover and the drum membrane to heal without leaving a perforation. If a simple mastoid did nothing more than prevent a permanent opening in the ear drum, it would be an amply justified procedure. A perforated ear drum, even though dry, is a very undesirable result, and can be prevented by timely

incision, and if this does not relieve the condition a simple mastoid should be done before the condition has been allowed to go long enough to cause a permanent perforation or a chronic suppurative ear. We all know that an ear drum with a permanent perforation leaves a much impaired organ, and certainly very materially limits the activities of one so affected. If I had to make the choice between a permanent opening in my own ear drum, even though dry, and a simple mastoid competently done, I would by all means choose the latter.

As to treatment, after the ear has been allowed to become chronic, and there are a large number of individuals who have been allowed by neglect to develop this baneful condition, there is much that may be done. We are considering now the second group in which there is no definite bone involvement. First, we must select the cases for conservative treatment. We exclude from this group the cases in which there is involvement of the attic, those associated with chronic mastoid, and those with cholesteatoma, or evidences of bone involvement.

Every case of chronic otorrhea should have a complete physical examination, including the Wassermann and a test for tuberculosis. As a preliminary, the treatment should include the removal of all predisposing factors. Removal of infected tonsils, adenoids, the clearing up of all chronic nasal infection, and correction of conditions predisposing to repeated acute infections, such as a deviated nasal septum, and other conditions of the nose predisposing to acute infections must be done. All possible foci of infection must be removed and investigation of the teeth carried out.

The way having been cleared by a preliminary correction of these defects, and the middle ear having been cared for as much as possible during this process, the actual treatment of the ear condition is to be considered. The methods of treatment of this condition are legion. There are almost as many methods of procedure as there are individuals treating these cases. The several methods giving most satisfactory results in our hands have been varied as the case demanded. One of the most satisfactory methods we have used has been the use of plain dry gauze packing. First, daily care must be given. We cleanse the ear by using boric acid irrigation, if needed. Usually this is not necessary after the primary examination. Wherever possible, however, we use the cotton wound applicator in preference to the irrigation, getting the ear as dry and as clean as possible and finally drying it thoroughly by the use of 95 per cent alcohol. This is followed by placing a narrow strip of gauze packing, not more than one-half inch wide, drawn out to a fine point and all loose threads removed, through the perforation if possible into the middle ear. Most of the time the perforation is sufficiently large to permit this being done. This is removed and replaced in twenty-four hours. The removal of all polypoid and granulation tissue, if present, should be accomplished before starting this or any other treatment. The polyps are best removed under gas anesthesia, following the application for ten minutes of cotton saturated with adrenalin chloride one to one thousand. Removal may be done with an aural snare or a ring curette. The granulations, when present, are satisfactorily reduced and finally removed by the use of various cleansing methods, followed by use of silver nitrate solution in increasing strength up to 25 or 30 per cent if necessary. We have also used with considerable success the ether treatment. This consists of the usual cleansing processes, followed by the instillation into the ear of about fifteen drops of ether, which is allowed to remain in the ear until complete evaporation takes place. Ether boils at about or a little below body temperature, so that the time of evaporation is considerably shortened. In this like all other cleansing and drying treatments, it must be done daily. It is sometimes necessary to use the ether twice daily to obtain best results. The patients may be allowed to use the ether themselves for the second daily treatment. Another very satisfactory treatment, especially in children who have had a discharging ear for from four to six weeks, which, if not chronic, certainly borders the chronic type, has been the use of the following:

Hydrargyri Bichloridi	gr.ss
Acidi Boraci	gr.x
Alcohol (75%)	℥i

This should be instilled into the ear twice daily, following complete and careful cleansing with boric acid solution.

In reviewing the literature for the past two years, it is very definitely agreed by most of the authors that 50 per cent of the cases of

chronic otitis media can be cured by conservative methods, and that a great many more are considerably benefited. In a paper of this kind, it becomes necessary to discuss some of the methods of treatment suggested and carried out by the authors of some of the more recent articles. Practically every article reviewed advocated one or more of the various antiseptic and drying methods. David Smith and Justina M. Hill, of Johns Hopkins, made numerous tests in their work in which they used cultures from purulent otitis media cases in testing the bactericidal effect of several drugs and dyes. They employed acid fuchsin, neutral acriflavine, gentian violet, mercuric chloride and mercurochrome. It was found the meroxyl, or sodium mercuribenzophenone sulphate, acted principally on gram negative organisms, and gentian violet acted largely on gram positive organisms. These two drugs cannot be mixed. The pyocyaneus resisted both these drugs. Acetic acid was then employed. It acted almost like a specific in pyocyaneus infection. It was also found that acetic acid could be combined with meroxyl. Schwartz[1] simplifies considerably this method of treatment by the following procedure in the use of which a culture or smear is not necessary: "After the external auditory canal and middle ear are thoroughly cleaned with peroxide, half a medicine dropper of the meroxyl and acetic acid solution is introduced into the external auditory canal. This solution is washed back and forth in order to force the solution into the middle ear, so that it may act directly on the organisms. The ear is then dried by suction and by means of cotton applicators. A few drops of the gentian violet and neutral acriflavine combination are then instilled into the ear, and a piece of cotton placed in the external auditory canal to prevent the medication from flowing out. This is left undisturbed until the next treatment." Schwartz[1] takes up the oft-repeated objection to the use of hydrogen peroxide and states the belief that it is groundless and that there had been no complications from its use in his hands. Bozer[5] has reported its use in one hundred and ninety cases without any mastoid complications.

The results obtained by Schwartz with this method of chemo-therapy have been very good. The neutral acriflavine, gentian violet, mercurochrome, and brilliant green are all made up in 20 per cent alcohol and are used in 1 per cent strength. The meroxyl is used in .05 per cent and is made up entirely as a watery solution. Meroxyl is non-staining. Brilliant green, a dye not yet employed to a great extent, has been found to be of use in combating streptococcic infection. A more recent drug is acri-violet, a mixture of acriflavine and gentian violet, which is nothing more than a combination of the two drugs employed by Schwartz.[1]

Zinc Ionization.—Haskins[2] reports in abstract Friel's[3] work on zinc ionization: "To determine which cases of chronic otorrhea are suitable for the application of this method, we have to decide on the cause of the chronicity. (1). Is it due in any particular case to the irritation of septic fluid in the ear? (2). Is it possible to fill the entire cavity containing the septic fluid with zinc solution, or is a portion of the cavity inaccessible without operation? (3). Is there any factor in addition to the sepsis responsible for the continuance of the suppuration, such as polyps, granulations or cholesteatoma? (4). Are areas, the nose, naso-pharynx and mouth, which communicate with the ear, in a septic condition? This would make reinfection of the ear inevitable, and a continuance or a recurrence of the discharge almost unavoidable." Friel[3] estimates that "the percentage of cases of chronic otorrhea in children, due to simple tympanic sepsis, is approximately 50 per cent. These cases are cured in two to three visits. In a further 25 per cent, the otorrhea is kept up by sepsis, with polypi or granulations, or by muco-purulent rhinitis or inflamed tonsils. In these cases it is desirable to convert the dual or triple condition of sepsis plus polypi, or sepsis plus rhinitis, etc., into the simple condition, sepsis, before attempting to sterilize the middle ear by ionization. These patients will require on an average of from six to eight visits. The remaining 25 per cent are those in which there is sepsis in a position where it is not possible to introduce the zinc solution without some form of operation. These include most of the mastoid and attic cases."

After a very careful study of the literature for the past four years, I find that most otologists agree that 50 per cent of all cases of chronic ear suppuration will clear up with efficient conservative treatment. In practically

all the literature reviewed, the authors are using one form or another of the antiseptic, drying, and suction methods of treatment. Of the antiseptic methods, the one particular method coming in for most praise generally was ionization; and in his article published in 1925, Stephen Young[4] very aptly sums up the general opinion of zinc ionization in the following manner: "More recently ionization has come to the aid of the otologists. Ionization consists in introducing into the tissues, by means of electricity, one or the other of the salts known to have an inhibiting influence on the growth of septic micro-organisms. There is also an exchange of ions in the tissues, as the result of the application of a continuous electric current. Sufficient evidence has been collected to show that ionization undoubtedly occupies a middle place in the treatment of chronic suppurative otitis, and that a certain number of cases, not responding to the ordinary conservative methods of treatment, give good results with ionization, and thus prevent the necessity for at least some mastoid operations."

Bozer[5] studied the results of one hundred and ninety cases treated at the Mayo Clinic. The treatment was essentially a combination of the antiseptic alcohol and caustic methods described by Politzer, varying in each case with the type of disease process. The usual procedure carried out was the instillation into the ear of ten to fifteen drops of hydrogen peroxide, which was allowed to remain for several minutes. The ear was then dried with cotton wound applicators, and a 50 per cent solution of alcohol, containing 3 per cent boric acid and 5 per cent mercuric chloride, was then instilled into the ear and allowed to remain a few minutes. This was also wiped out and the drying process completed by directing air under pressure into the aural cavity, taking care that it was not sufficiently strong to produce vertigo. No other type of treatment was used. About 50 per cent of the one hundred and ninety patients responded satisfactorily to the treatment, and remained in good condition for a period of at least one to two and one-half years. The average duration of treatment of patients who later remained in good condition was three and six-tenths weeks.

Fox[6] reports a series of cases treated by ionization. The average number of treatments per case was thirteen and three-tenths, ranging from five to twenty-nine. At the beginning the treatment was given every other day, commencing with three milliamperes for two minutes. If there was no reaction after two or three treatments, the time was increased to fifteen minutes, the current being the same. From two to four minutes should be consumed in reaching the maximum current. The discharge was stopped in nearly every case. The technique consists in first cleaning and drying the ear. After drying with cotton, boric alcohol is applied. This is followed by filling the ear with 1 per cent zinc sulphate solution, in which is placed the positive zinc electrode in the center of the canal. This should be done with care, for, without this precaution, an ulcer may be produced at the point of contact. The patient's hand is placed in a container of water, to which is attached the negative pole. The galvanic current is now cautiously turned on very gradually, and when the ear starts aching, the current must be turned back. The cases best suited to this treatment are the old chronic cases with large perforations.

After extensive reading and observation, I find there is no routine treatment for the chronic running ear except, possibly, by preventing them.

BIBLIOGRAPHY.

1. Schwartz, Ellis M.—*Ann. Otol. Rhinol. & Laryngol.*, 34, 932-937, Sept., 1925.
2. Friel, D. R.—*Lancet*, March 3, 1923.
3. Haskins, Wm. Henry.—*Ann. Otol. Rhinol & Laryngol.*, 33, 12-72, Dec., 1924.
4. Young, Stephen—*Glasgow Med. J.*, 103-N. S. 21-293, 1925.
5. Bozer, Hermanne E.—*Ann. Otol. Rhinol & Laryngol.*, 32-277, 1923.
6. Fox, Merle C—*Northwest Med.*, 22-323, Sept., 1923.

Medical Arts Building.

THE USE OF ALCOHOL IN MEDICINE.*

By CHARLES WILLCOX, M. D., Washington, D. C.

The use of alcoholic drinks and the beginning of man were probably synchronous. The ancients looked on wine as one of the great gifts of the gods, though the Greeks appear to have abused this gift by adding to their wine such flavorings as sea-water, resin, aloes, wormwood, and other preparations. The Egyptians made various wines fifty centuries before the Christian Era, and Osiris is believed, on his travels, to have devised the preparation

*Read before the Section on Internal Medicine, Medical Society of the District of Columbia, May 28, 1926.

of a beer from fermenting grain, for use of those peoples who were not so fortunate as to possess vineyards.

When and how wines, beers and liquors were first used as medicines is more or less hazy legend, but in more recent times, that we now call the good old days of heroic therapeutics, when calomel and quinine were used in enormous doses, we know that alcohol was considered to be a panacea for the cure of very many diseases, and to be a potent preventive of infections. These ascribed virtues were due in the former cases to the mistaken belief that alcohol was a stimulant, and in the latter cases to the still more mistaken belief that alcohol in the body acted as a barrier and greatly added to the defense against all diseases. An incident following the epidemic of cholera in Altona, Germany, is interesting not only as tending to shatter the belief in the protective power of alcohol, but as possibly indicating the beginning recognition of "carriers" before the days of "Typhoid Mary." Three robust male nurses had done yeoman's work in caring for cholera cases, had escaped infection and, while enjoying a well-earned rest, decided to celebrate, during which celebration they indulged unwisely in too much drink, with a resultant irritation of the intestinal tract and a lowering of their resistance, thus giving the comma bacilli, that they had for weeks doubtless been carrying in their healthy intestines, a chance to assume a successful attack.

From the day when alcohol was considered a potent cure-all, it gradually came to take its proper place in therapy, a place between therapeutic nihilism and the therapeutic pedestal it formally occupied. At the time its limitations and virtues were better understood, a law was suddenly enacted that not only makes the use of inferior preparations in medical practice much more probable, but makes the most beneficial use of any preparation not only difficult and often embarrassing but at times impossible. Alcohol at once assumed undue importance and notoriety and now has the unique distinction of being the only liquid medicine patients persistently advise their physicians to prescribe for them. The psychological effect on many patients and on more "would-be-patients" is unfortunate. Most of them have a fear, not of the possibility of wood alcohol being an ingredient, but of fusel oil which they hear so much about. Most of them would be greatly surprised if told that fusel oil is not a single substance, but is a mixture of the higher alcohols, mostly the amyls, that come over in small amount in the distillation of all good liquors; and that in ageing in charred casks, while some of the lower alcohols and some of the water evaporate, the higher alcohols do not; therefore, in good old seasoned liquor there is a larger percentage of fusel oil than there was in the greener liquid. The amount in good liquors is so small it can be ignored from a therapeutic standpoint; for instance, one analysis of 92 litres of Cognac gave 206 grams fusel oil or about 1/5 of 1 per cent, and in these proportions:

Propyl	12 per cent
Iso-butyl	3 per cent
Amyl	85 per cent

The irritating effects and disagreeable taste of freshly distilled liquors are due not to fusel oil but to some volatile substances, principally furfurol, that, after prolonged contact with the charred interior of barrels, forms esters to which is due the mellowness or "bouquet" of old whiskey and brandy. An analysis of 3 star brandy showed 110 parts esters to 100,000 parts of absolute alcohol, while 1 star brandy showed but 97 parts.

Alcohol has been with us for centuries—it is still with us—and it is only reasonable to assume it will always be with us. It has been, is being, and will be used in moderation by millions of intelligent men and women, and with no apparent harm. Millions have used it excessively and with dire results. These uses and abuses are, however, in no way therapeutic. As physicians we must look on alcohol, not with the eyes of the enthusiastic optimist, Omar Khayyam, nor with the eyes of the sombre pessimist who wishes to consign its users, with no exceptions, to jail. Unreasoning bigotry can only harm our practice, and we must look on alcohol with unprejudiced, rational eyes—as we do, for instance, on belladonna or epinephrin, simply realizing its virtues and its dangers—very easy after all.

Let us consider briefly what would happen if the world's supply of alcohol was destroyed and its manufacture stopped. It is no exaggeration to say it would relegate the drug business to the dark ages. Alcohol is the only known agent that will extract the valuable and

potent medicinal principles of the vegetable kingdom, leaving behind the inert, valueless mass. Manufacturers have, wherever possible, substituted acetone, water, glycerine, or syrup, but as yet no agent has been found that can replace alcohol. It is not only an invaluable extractor, crystalizer and solvent, but it is an ideal preservative. Moreover, alcoholic solutions do not freeze and break glass containers, and as a solvent it has a pleasant odor and a not disagreeable taste. In addition to its being the ideal and as yet unreplaceable solvent and preservative of drugs, it is a basic agent in the making of our precious anaesthetic ether. Furthermore, yeast, one of the by-products of its manufacture—as conversely alcohol may be considered a by-product in the making of yeast—is more valuable therapeutically than is generally realized, not so much for its recently popular use in a more or less haphazard way to furnish vitamines, but for the making of the staff of life. Bread, of course, can be made with baking powder, but it is not then wholesome yeast raised bread. These uses of alcohol, exclusive of its virtues as a medicine in selected cases, show that it is essential in practice. It can be made in practically unlimited quantity, and very cheaply. The excessive cost of ethyl alcohol is of course due to its very heavy taxation, and not to the cost of its manufacture.

The recent literature on alcohol is stupendous, and nearly all of this mass is on its abuse, an old story with which the profession and the laity have been familiar for many years. Very many carefully conducted experiments have been done on animals, and on physiological secretions, but these must be interpreted carefully when trying to reach correct conclusions as to alcohol's effect on man,—for example, its effects on the gastric or duodenal contents in a test tube are very different from its effects on the same contents in their proper habitat. The alcohol remains in the test tube and continues to act on non-mobile fluids. In the healthy stomach it is rapidly absorbed as alcohol into the blood stream, and still more rapidly absorbed from the duodenum. In experiments on animals, the psychological factor, so important in man, is missing, and it is difficult to form any reasonable conclusion of its effect on man from careful experiments that show, for instance, its effect on the intellectual behavior of tadpoles.

To appreciate its therapeutic effects, we must be guided above all by careful clinical observation at the bedside, the most valuable criterion; then by logical interpretations of laboratory experiments on human beings; and, lastly, by pathological post-mortem findings, differentiating the findings due to alcohol alone from those due to numerous other factors.

Before considering the uses of alcohol, it is well to consider its contraindications. It should not be prescribed:

As a placebo;

For robust young adults unless conditions are alarming;

For reformed drunkards except in cases to be mentioned later;

For epileptics;

In cases of acute gastritits, hepatitis, or nephrititis, as a rule.

Finally, no more should be prescribed than is indicated, nor should its use be continued after it has performed its mission; in other words, we should use alcohol with the judgment we use digitalis, always having in mind its easily acquired habit, and the ultimate depressing effects of large doses. While it will often help a nearly exhausted person in the last few minutes of supreme physical effort necessary to attain an object, it is a most serious mistake to give it with the hope that it will carry one through prolonged exertion, especially in very hot or very cold weather.

Uses of Alcohol

Local: Alcohol is an excellent sterilizing agent for very delicate instruments that might be injured by other methods. It must not be forgotten that dry micro-organisms are not destroyed by alcohol; they must be moist; therefore, ordinary alcohol best in about 60 per cent solution, is effective, while absolute is not.

Recently its use as a gargle has been reported favorably as a prophylactic measure during exposure to infections of the upper respiratory tract. The older method of using a weak solution of tincture of iodine for the purpose is probably as effective and is less irritating. If mercurochrome or tincture of iodine are not on hand, it is a very good substitute for the

cleansing of wounds. It is advisable for use on the skin before vaccination.

It is most soothing and beneficial as a "rub" when the skin is hot and dry, and nothing is better as a preventive of bed sores in bed-ridden patients.

Internal: The internal use of alcohol is by far the more important. Its absorption from the healthy stomach is rapid, occurring in from one-half to two hours if the stomach is empty and the alcohol is in concentrated form. It enters the blood stream unchanged and is the only food absorbed unchanged from the intestinal tract. It is rapidly oxidized, only about 2 per cent of an ordinary dose being excreted by the kidneys and lungs. If a large quantity is taken at once, the amount so excreted will not exceed 10 per cent. It has a high caloric value, about 80 per cent of that of fat.

Mallanby made determinations on man of the fate of alcohol after very large doses. He found a martyr to science, a man of 70 kilos, and gave him whiskey containing 171 c.c. of absolute alcohol, once on an empty stomach, once 2 hours after a pint of milk, and once diluted with a pint of milk. He found in the experiment of whiskey on an empty stomach 100 c.c. blood had 330 c.mm. of alcohol or 1/3 of 1 per cent after one hour. Thereafter it gradually decreased. One hour after drinking whiskey on the milk diet the alcoholic content was 220 c.mm., and 1 hour after drinking whiskey mixed with milk it was 160 c.mm. In the two later cases, instead of reaching its maximum blood content in 1 hour, it took 2 hours. Thence the descent of the curve was the same in all cases. These experiments show: The rapidity of the absorption of strong whiskey from the empty stomach; the slower absorption from a partly filled stomach, and especially the efficacy of milk when mixed with alcohol in slowing the absorption of the latter. They show the rapidity with which oxidation occurs, *i. e.*, at the rate of 10 c.c. absolute alcohol per hour in the average sized adult. They show chemically what had been known clinically, the reasons for giving, therapeutically, alcohol well diluted, and in small doses, over a long period; for instance, 10 c.c. of alcohol is oxidized in 1 hour after its absorption by the blood stream, while it would require 10 hours to oxidize 100 c.c.

Alcohol has a depressing effect on the higher centres of the brain, thus checking their usual inhibitory action on the lower centres. On respiration its effect is therapeutically negligible. It appears to effect the circulation indirectly by dilating the peripheral vessels, thus balancing the circulation, lessening the work of the heart, and tending to lower blood pressure. It has no effect on the temperature save by its causing increased radiation by virtue of dilating the peripheral vessels. Its effect on digestion is due to an increase in gastric secretion, which is to some extent counteracted by its inhibitory action on the gastric ferments.

While usually given well diluted, there is one condition in which the administration of strong spirits, good old brandy above all, often acts like a charm,—that is in painful flatulence. Wine has been aptly called "The Milk of Old Age," and here is one of its most useful fields. In feeble old men and women who have cold skins, who have little appetite, who often have what is called "atonic dyspepsia," and who seem to have lost much of the natural interest and joy in life, a little alcoholic therapy at meal times will greatly aid digestion, will produce a genial glow to replace their chilly feeling, will make them take a more cheerful view of life, and minimize their cares and worries. Above all, by its hypnotic power, it will give them a good night's rest. If they desire a special form of alcoholic drink, it is wise to give it, if procurable.

To consider the other extreme in life alcohol has a very well-defined role in treating babies and young children. While we have by better feeding tremendously reduced the number of what are familiarly known as the summer diarrheas of babies, yet they do occur, and in cases of collapse very gratifying results have followed the giving of good brandy in small frequently repeated doses. It appears to act in these cases not only as an evanescent stimulant, but especially as an easily and rapidly digested food, supplying by its rapid oxidation that energy and heat that temporarily cannot be given the enfeebled little body by the usual infant foods. It adds nothing to the intestinal tract to decompose or ferment. It has perhaps a less well-defined role in the pneumonias of children, but from my observations I believe it has carried some of my little patients past critical periods, and saved them.

In Asiatic cholera, where extreme dehydration appears even more rapidly than it does in severe cases of milk-feeding injury in babies, I have had gratifying results in some apparently hopeless cases, by giving frequent doses of whiskey or brandy well-diluted—and its beneficial effects I believe can be ascribed to its food value as a readily combustible fuel to supply energy in crises. At all events, the cold clammy skin gradually became warmer, the dehydration was gradually overcome, diarrhea lessened, and the alcohol seemed to be the agent that supported the patients until their anti-bodies could assume a successful offensive against the comma bacillus.

Amongst the laity alcohol has a great reputation as a cure for the poison of snake bites. Aside from its mental effect in soothing the mind of the one bitten, it does no apparent good. On the other hand, due to its reputation, it is often taken in stupendous amounts, and in the few cases of rattle snake bite that I have treated, the acute alcoholic poisoning was a more serious factor than the snake venom. In selected cases of pneumonia, alcohol is invaluable; in some, occurring in alcoholics, it is mandatory. In those with extreme depression, with a feeble heart, low muttering delirium, brown, dry tongue, and distended abdomen, alcohol given in large amounts over a period of several days has saved many lives. The heart improves, the delirium gives way to a comparatively calm restfulness and optimism, and from a rapidly sinking maniac, your patient is transformed into a more rational being, feeble yet, but now endowed with that hope and feeling of well-being that will carry him on. Typhoid fever, now much rarer, thanks to better sanitation and to vaccination, often showed a clinical picture like that of the pneumonias and with the same delirium; alcohol proved of equal value in such cases. Generally it is beneficial in septic cases, surgical as well as medical.

Alcohol has given good results in some cases of diabetes. Being non-nitrogenous, it cannot replace the proteins that are broken down in the body, and it cannot replace insulin in the burning of sugar. It can, however, reduce the dose of insulin by acting as a substitute for part of the carbohydrate in the diet, as it is excellent fuel for the burning of fats. It does not become glycogen and, as it is not ketogenic, it does not add to the risk of poisoning the patient.

It has often been found that men after hard labor suffered from severe cramps if they quenched their thirst with pure water. There is a great loss of body salts through the sweat, and water alone gives rise to a mild poisoning. When cider, beer, or diluted wine is used as a thirst quencher, these cramps do not occur.

Undoubtedly the empirical use of mild alcoholic drinks is based on centuries of experience in the mines and fields of Europe and explains the French peasants' use of his wine and water after hard labor. The use of wines in Europe, far from doing harm, has done good, not only by their psychological effect, but by improving the quality of very poor water. They drink in moderation, and the greatest insult you can offer a Spaniard is to call him drunk. The only ill effects of alcohol I have seen in France were inNormandy where they drink very ardent spirits in the form of "Calvados," or apple brandy, the green preparation being similar to our moonshine. Mothers have sometimes given it to babies to quiet them, which it has effectively done with the same disastrous results that some narcotic so-called "soothing syrups" have had in quieting babies in our country. It is this abuse of spirits in Normandy that has resulted in a move in France for temperance, not prohibition. They desire simply to improve the local condition as they once improved a more general condition when they stopped the use of absinthe.

Alcohol has been of benefit even to athletes in training. While smoking has been cut out, a small amount of ale, wine, or spirits has been allowed with dinner. The athlete has better enjoyed his meal, felt better, slept better, thoroughly oxidized his small dose during the night and been in better condition the following day.

Professor Pearl, of Johns Hopkins, in a careful and unbiased study, has shown that, while heavy drinkers die earlier than total abstainers, those who use alcohol in moderation live slightly longer. The psychological factor of a gentle euphoria may play an important part in this.

Nausea, especially that most distressing indication of sea-sickness, is often relieved and even cured by alcohol when nothing else has had any effect. Champagne has been the most

efficient form. Brandy has been almost as good, and I have seen a number of cases respond to Benedictine. Why Benedictine should act so happily I cannot explain, save again on psychological ground. It is, however, often impossible to carry out this treatment on United States Liners.

The greatest value of alcohol, then, lies in its hypnotic and psychological effect. Nothing can replace it in relieving the worry, distress, and anxiety of the patient, and in giving him that feeling of repose and well-being that plays so vital a part in helping him over a crisis or in rendering a case of helpless suffering more bearable.

Unfortunately, we are now handicapped greatly in not being able to prescribe it in the most beneficial way. Not only are we not as sure of our preparations as we were, but we are limited as to the amount we can use. A patient may require, for example, two litres of whiskey or brandy every 5 or 6 days to save his life. It would be just as sane and just as merciful to limit to one grain the quantity of morphine we could give in a day to relieve the agony of a patient dying with cancer of the tongue. Even with our handicaps, we can still use alcohol with great benefit in carefully selected cases. We should use it fearlessly and with the good judgment we use other drugs, always bearing in mind that while it can be a most vicious master, it is, and let us hope always will be, a most valuable servant.

2017 *Q Street, Northwest.*

WHY STANDARDIZE THE HOSPITAL?*

By P. W. BOYD, M. D., Winchester, Va.

During the few years of the existence of the Valley Medical Society, I have been deeply interested in its progress and worth to the medical men in the Shenandoah Valley and especially to its captains who have guided the society's destinies and have been instrumental in making this one of the best societies in the state. Our progress must continue and we should realize that progress depends upon union.

There is no one agent to bring doctors closer together than the hospital. All of us are connected directly or indirectly with hospitals, either in the management of the institution or the supply of patients to the institution.

The hospital today bears a complex relationship to the lives of the people in its neighborhood. Into its walls come the rich and the poor, the learned and the ignorant, the normal and afflicted. They all come with one definite need—to be helped mentally or physically. They come, as mankind has always come, to a healing spring, a pool, a river, or a shrine,—where once they found a priest or prophet, they now find a doctor or a nurse.

Over how wide a field can a hospital extend its influence? The answer will depend upon many things. Service to the patient is the major function and includes adequate care and every reasonable attention to his physical and mental comfort.

It must be so organized, equipped, personneled and controlled that the patient surrounded by the best there is in medical science will receive—

1st. An early and accurate diagnosis;

2nd. The most efficient and effective treatment;

3rd. Complete and permanent restoration to helath, if possible, in the shortest time and most comfortable manner, thus fitting the person to return to producing capacity and thereby adding to the wealth of the nation.

Between the years 1913 and 1918, the American College of Surgeons made an exhaustive survey of hospitals in the United States and Canada. This information, when compiled and considered, revealed marked deficiencies so far as rendering the highest quality of service to the patient.

After careful deliberation there was established what is now recognized as the *minimum standard*. This standard consists of simple, concise, definite principles, adaptable to any institution, based primarily on *service to the patient*, and reads as follows:

"1. That physicians and surgeons privileged to practice in the hospital be organized as a definite group or staff. Such organization has nothing to do with the question as to whether the hospital is 'open' or 'closed' nor need it effect the various existing types of staff organization. The word *Staff* is here defined as the group of doctors who practice in the hospital, inclusive of all groups, such as the 'regular staff,' 'the visiting staff,' and the 'associate staff.'

"2. That membership upon the staff be restricted to physicians and surgeons who are

*President's address before the Medical Association of the Valley of Virginia, at Harrisonburg, May 27, 1926.

(a) full graduates in medicine in good standing and legally licensed to practice in their respective states and provinces, (b) competent in their respective fields, and (c) worthy in character and in matters of professional ethics; that in this latter connection the practice of division of fees, under any guise whatsoever, be prohibited.

"3. That the staff initiate and, with the approval of the governing board of the hospital, adopt rules, regulations and policies governing the professional work of the hospital; that these rules, regulations and policies specifically provide:

(a). That staff meetings be held at least once each month. (In large hospitals the departments may choose to meet separately).

(b). That the staff review and analyze at regular intervals their clinical experience in the various departments of the hospital, such as medicine, surgery, obstetrics, and the other specialities,—the clinical records of patients, free and pay, to be the basis for such review and analyses.

"4. That accurate and complete records be written for all patients and filed in an accessible manner in the hospital, a complete case record being one that includes identification data; complaint; personal and family history; history of present illness; physical examination; special examinations such as consultations, clinical laboratory, X-ray and other examinations; provisional or working diagnosis; medical or surgical treatment; gross and microscopical pathological findings, progress notes; final diagnosis; condition on discharge; follow-up, and, in case of death, autopsy findings.

"5. That diagnostic and therapeutic facilities under competent supervision be available for the study, diagnosis and treatment of patients, these to include at least: (a) A clinical laboratory providing chemical, bacteriological, serological and pathological services; (b) an X-ray department providing radiographic and fluoroscopic services."

The standard as described above has been presented annually for eight years to the active general hospitals of the United States and Canada, and approximately the College has spent one-half million dollars on this work. As a result of this work hospitals have been increased in efficiency over 50 per cent during this period.

An approved list of hospitals is published annually. This frequently serves as a guide to patients who are seeking hospital service, knowing that in the approved institution they are assured of every thing that is ordinarily necessary for their comfort, safety and efficient treatment.

Already the American Railway Association has directed its fourteen thousand surgeons to select for their patients approved hospitals.

Young women entering the profession of nursing give preference to the schools of nursing attached to the approved hospitals.

Many philanthropic and governmental organizations called upon to assist hospitals financially are frequently influenced in their decisions if the hospital is or is not on the approved list.

The ultimate aims of hospital standardization and what is now being accomplished are:

1st. Shortening of the average number of days that the patient stays in the hospital, the average time now being from twelve to fourteen days, as against fourteen to eighteen days formerly, due to better treatment and focusing all the services of the hospital upon the patient.

2nd. The elimination of incompetent and unnecessary surgery. It is interesting to note that the quality of surgery is much higher, due to better means of diagnosis, increased numbers of consultations, group study of clinical conditions and more modern technique and procedures. Formerly many abdomens were opened in order to make a diagnosis, but now the splendid clinical facilities in hospitals enables the surgeon and physician to make his diagnosis more accurately.

3rd. Through better supervision and checking up and improved technique, the number of infections and complications in hospitals has been very noticeably decreased.

4th. Lowering of the hospital death rate, which was formerly 40 to 60 per 1,000 patients treated, has dropped to from 20 to 30, or even less in some instances.

Staff Organization

Staff organization should be done with the greatest care. Hospital privileges should not be extended promiscuously. The medical staff demands just as much care in its relation as does the surgical staff. Only full graduates of medicine in good standing and legally licensed to practice in their respective states should be

members of the staff. We must declare without reservation that the hospitals be kept for the real scientific, thoroughly trained profession of medicine.

The practice of fee-splitting is unreservedly condemned. While it may not be an issue in all communities and all hospitals, it is nevertheless required that the medical staff and board of trustees of all standardized hospitals go on record against this practice.

Staff meetings must be held at regular intervals at least once each month, and all members privileged to practice in the hospital should attend the regular staff meetings for the intelligent discussion of his clinical activities. The doctor who is not interested in attending these meetings should not have a place in an approved hospital. Unavoidable absence is of course recognized. The average attendance should be at least 75 per cent in any hospital.

The staff meeting must not be of the County Medical Society type. The discussion should be limited to the happenings within the walls of the institution and must by all means be treated as confidential. The entire meeting should be characterized by a generous spirit of giving and receiving, where knowledge is pooled for the benefit of all present and particularly for the patient. To quote from the last hospital standardization report, "find the facts, filter the facts, focus the facts, fix the facts, and face the facts fearlessly."

Knowledge is gained in two ways, by imparting to others and by others imparting to us. Tell about the patient who much to your disappointment died during the course of treatment. Solicit opinions and comments from listeners in order that you may gain information from their experiences to help with the next case of a similar nature, always keeping in mind better service to the patient, increasing clinical efficiency, and adding to your fund of knowledge.

Complications and Infections

Complications and infections should be traced to the cause and preventive measures recommended as deemed necessary. There is nothing worse for the doctor and hospital than infection and complications. They keep the patient in ths hospital longer and tend to bad end-results and cause the institution and patient extra expense.

Certain unimproved patients sent out of the hospital are a very bad recommendation for any institution and one should be careful not to discharge a patient from the hospital until he feels sure convalesence is assured. The staff should determine whether or not every facility was used in making a proper diagnosis and in rendering treatment before the patient was discharged.

The staff conference, if properly conducted and with the right spirit and object in view, cannot help but be of all-round benefit to the patient, the doctor, the hospital and scientific medicine generally.

Case Records

No hospital can maintain its standard without adequate case records. The conscientious doctor who wants to do thorough work should not be familar with the terms "negative" and "normal" which so frequently constitute the bulk of a case record.

Too many operations are carried out before there is a proper estimate of the patient's reserve to carry through under the extra strain.

When a doctor examines his patient, he has three things to find out:

1st. What is the pathological condition?

2nd. What is the physical reserve of the patient?

3rd. What part has he to play in re-establishing the normal balance or maintaining that which is best for the patient under the circumstances?

A careful study of the recorded facts can alone determine these points. Up-to-date, complete, true records undoubtedly reflect the character of the hospital and particularly the medical staff working therein.

The day has passed when a doctor can ignore the clinical laboratory. The methods of teaching medicine are different and we are now dependent upon the laboratory for an accurate diagnosis. There must be a close contact between the clinical laboratory and the medical staff. The laboratory should be in a location accessible to all members of the staff, where contact is much more frequent. It should be opened to the clinician at any time he wishes, and he should always receive as much personal attention as can be afforded him.

Routine examinations should nowadays be carried out in the hospital. The following are given the most consideration:

(a). Blood examinations—red, white and haemoglobin.

(b). Urinalysis.
(c). Blood coagulation.
(d). Wassermann.
(e). Tissues from operations.

I believe the most satisfactory method to adopt for laboratory charges is a flat rate, the private room patient being charged a higher rate than the ward patient.

Hospitals continue to improve their X-ray laboratories. Many new departments with modern equipment have been added, benefiting patient and physician.

I would like to urge better co-operation and closer contact between the doctors and roentgenologists. It is amusing to see how often a patient is sent into the X-ray laboratory for a complete gastro-intestinal examination and the doctor expects a complete report within a few minutes. If we want an intelligent report, the roentgenologist must be given time,—at least twenty-four hours for a gastro-intestinal examination.

Aseptic technique has made surgery a spectacular art. It has given us knowledge of pathological processes in the living body, and this has added much to the knowledge of all diseased conditions, greatly advancing all internal medicine though it has had a tendency to fix the public eye on surgery and to minimize the work of the internist. As a result, it has created the impression that hospitals are only essential for surgical work. This distinction should not be made, for one is equally as important as the other and should be viewed as group work.

The great minds that have brought surgery to its distinguished place could never have done so had it not been for the helpful facilities with which they are surrounded.

Internal medicine is coming into its own. Observations concerning endocrine gland secretions and their influence on body and mind development, and also on body function, are creating new and broader interest in internal medicine.

The internist must have in his work an equipment for serving his patients as well suited to his needs as the surgeon requires for his.

The management of a hospital is helpless if the staff does not co-operate whole-heartedly. Consequently, it is up to the profession to give liberally of their time and talents if they would see it succeed.

Hospital standardization means a better service to the patient through the advantages of a thorough and scientific investigation and treatment; hence better returns are given the community. When a patient enters the hospital, let the question be: "What service can be rendered?" not "How much can you pay?"

SUDDEN DEATH.

By WYNDHAM B. BLANTON, M. D., Richmond, Va.

Unicellular organisms, bacteria for example, may live eternally, because multiplying as they do by fission, they are perpetuated in their descendants in a way which does not admit of death except by accident. Metazoa, on the other hand, man included, all suffer death, somatic death, though the sex cells in their descendants are endowed with perpetuity. Adami can conceive of an ideal body which does not die, barring accident. The cause of somatic death to him lies in the asynchronous development of the various organs, the atrophy of one after another, imposing burdens upon the surviving organs which ultimately exceed their reserve, resulting in death. This is physiological death in ripe old age. Pathological death, on the other hand, may occur at any period of somatic existence and may arise from mechanical, physical, chemical or bacterial causes. Pathological somatic death may be one of two orders—slow and expected, or sudden and unexpected. It is the latter category we wish to examine, namely, sudden unexpected somatic death.

Definition

Death is difficult to define. Only when the great triumvirate, heart, lungs and brain, cease to function and the signs of decomposition set in, are we justified in such an assertion.

The coroner has both sudden and unexpected death to deal with. To him the man who drops dead and the man who is found dead are equally interesting. In a sense sudden death may be entirely circumstantial. Thus, the tramp who is found dead in the park with pneumonia or who stumbles into the ward to suddenly and unexpectedly expire and at autopsy is found to have meningitis.

There is a saying, *cor ultimum moriens*. Eighty years ago the doctrine of Bichat prevailed. Death either was from (1) the *heart* (syncope); (2) *brain* (coma), or (3) *lungs*

(asphyxia). Lesser, in Germany, claimed that 66 per cent of his deaths were from the heart. Brouardel, the coroner of Paris, in a delightful book entitled "Death and Sudden Death," gives an elaborate classification. The subject has been indifferently considered of late. The few recent discussions in the literature have chiefly emanated from British coroners.

There are certain insurmountable difficulties in the search for a cause of death. They are inherent in the physiological cause of death rather than the anatomical. When is a man dead? We know that tissue can be cut from a cadaver hours after "death" and the cells of this tissue can be made to grow on the proper media. The coroner of Paris reported the case of a criminal whom he saw beheaded. One hour later, on listening over the precordium, he could still hear the heart beating. The drowned have been resuscitated as long as thirty minutes after submersion. The very criteria of death, heart beat, respiration and tissue viability, are thus often misleading. We should not be surprised to find the cause of death frequently shrouded in mystery even at autopsy. On the other hand, it is very important to know and not guess at the cause of death. The autopsy usually reveals its cause.

Death may be sudden and instant. This type of death results from (1) massive hemorrhage (ruptured heart, aneurysm, or large vessel in lung or stomach, etc.); (2) medullary injury with cessation of heart beat or respiration, (basal hemorrhage, reflex, anaphylaxis;) (3) status lymphaticus; (4) myocardial failure (ventricular fibrillation, myocarditis, angina pectoris (?), coronary thrombosis); (5) pulmonary infarct.

On the other hand, death may be sudden and not instantaneous—the elements of the unexplained and unexpected being uppermost. Such are certain hemorrhage (cerebral, not massive or basal), cardiac infarcts, angina pectoris, myocarditis, etc.

Brief Classification of the Causes of Sudden Death.

Cardio-Vascular System:

1. Hemorrhage (heart, aorta, any vessel).
2. Embolism (lung, brain, heart).
3. Thrombosis (heart, brain).
4. Myocarditis.
5. Angina pectoris.
6. Ventricular fibrillation.

Reflex to Vagus:

1. Punctures (spinal, pleural, pericardial, peritoneal).
2. Blow on neck, epigastrfium, hypogastrium.
3. Examination (vagina, urethra, esophagus).
4. Drinking cold water.

Respiratory System:

1. Laryngeal obstruction (edema, polyps, food, stridulus).
2. Tracheal obstruction (food).
3. Mediastinal tumors.
4. Pneumonia and pleurisy.
5. Capillary bronchitis.
6. Cancer.
7. Tuberculosis.
8. Whooping-cough.

Central Nervous System:

1. Rupture of brain abscess.
2. Brain tumor.
3. Meningitis.
4. Epilepsy.
5. Convulsions.
6. Pott's disease.
7. Alcoholic delirium.
8. Spinal puncture.

Uncertain:

1. Cold.
2. Heat.

Unknown:

Cardio-Vascular System

Hemorrhage is the great cause of sudden death. *Cerebral hemorrhage* naturally leads. The United States Census report for 1906 gave about nine thousand deaths for it in thirty-three million population. One hundred and seventy-seven deaths from this cause are registered for the city of Richmond in 1919. Of course, all of these are not sudden deaths; and, in general, such statistics are grossly inaccurate. Reviewing five thousand Bellevue autopsies, we found several years ago one hundred and nine cerebral hemorrhages. There was no attempt at finding how many had resulted in sudden death. It is interesting to note that in this series of five thousand autopsies with one hundred and nine cerebral hemorrhages, there occurred only twelve cases of thrombosis of an artery of the brain and but six cerebral emboli, indicating the great preponderating frequency of hemorrhage over both thrombosis and embolism. These facts are further exemplified in the autopsies here reported.

Rupture of an Aneurysm of the aorta, says MacKenzie, is a comparatively rare event.

Pulmonary Hemorrhage occurs in 60 per cent of tuberculous patients. It forms but 2 per cent of the mortality from this disease. Recollection of some 50 or more such hemorrhages impresses one with the infrequency of

a fatal issue. (About 1,000 such deaths occur yearly in England and Wales).

Gastro-Intestinal Hemorrhage.—Martin reported 100 deaths in 100,000 due to gastric ulcer. Twenty per cent of ulcer deaths are due to hemorrhage. This is, then, not a common cause of sudden death. Varices, occult intestinal bleeding, may cause sudden death very rarely.

Embolism.—A recent report from a surgical service of sudden death put pulmonary embolism far above all other causes.

Angina Pectoris.—Eighteen deaths are recorded from this cause as occurring in Richmond in 1919. Osler speaks of seeing sixty cases, chiefly in consultation. It is not a common cause of death. Naturally it is a sudden type. *Ventricular fibrillation* is uniformly a quickly fatal event. It is difficult to say how frequently it decides the issue, as there are no autopsy indications of such a cause.

Spontaneous Rupture of the Heart.—Krumbhaar recently collected 654 cases. It is an accident of old age, generally affects the left ventricle, occurs with coronary disease and usually on the basis of an infarct. "The immediate prosaic causes" are "walking, eating, defecation, slight exertion, or even during sleep."

Myocarditis.—Macht thinks it the most common cause of sudden death. Warthen recently reports eight cases of sudden death from syphilitic myocarditis. He insists that syphilitic myocarditis is a common disease.

Cardiac Infarction (Coronary Thrombosis). —Much of late has been written about this accident. Christian says that in the last ten years he has had in his wards forty-five fatal cases, twenty-nine of which were proven at postmortem. He also had twenty-five to recover from the attack.

Respiratory System

Respiratory Obstruction of the Larynx or Trachea.—Sudden obstruction to the air passages may result in sudden death. Such obstruction may arise from a polypus, or food, or sudden edema, or spasm. A larynx obstructed by a beefsteak is to be seen in the Museum of the College of Physicians and Surgeons in New York City. "Incredible as it may appear, it is not uncommon to find, in the autopsy upon drunken persons who have died with symptoms of choking, such masses so firmly wedged into the glottis as to be removed with difficulty" . . . (McCallum). Sudden death during whooping-cough may result from spasm of the glottis or a ruptured cerebral vessel. Patients with pneumonia and pleurisy die suddenly, but the cause is rarely pulmonary. Acute cardiac failure or more rarely embolism is responsible for the issue. The sudden deaths of capillary bronchitis, tuberculosis, cancer, find their real cause outside of the lungs. Sudden deaths from mediastinal tumors are probably pressure effects upon vital structures and may be initiated by slight changes in size, as, for example, by a hemorrhage into a tumor, which is common enough.

On the whole, then, respiratory sudden deaths, or the asphyxia of Bichat, are extremely rare, and even those which occur in the presence of pulmonary disease usually have extrapulmonary causes at bottom.

Nervous System

Brain Tumor (Neoplasm, Syphilis, Tuberculosis, Cysts).—"Death, which is often very sudden, is usually determined by respiratory failure" . . . (Edward Bramwell). Acute hydrocephalus, edema, or hemorrhage into the tumor initiate sudden pressure changes which disable the vital centers, especially the respiratory.

Rupture of a *brain abscess* may cause sudden death.

Sudden death in *meningitis* is common. Fulminating cases of meningitis may occur without temperature or changes in the spinal fluid, death occurring a few hours after onset.

Five per cent of the deaths in *epilepsy* occur suddenly during the convulsion; and epilepsy, of course, is a very common disease, being estimated as occurring once in every five hundred persons.

Sudden death occurs in *delirium tremens.* This is fairly high when it is recalled that in pneumonia complicating it the mortality is 14 per cent.

Sudden death may occur in the *convulsions* of childhood. Pott's disease, especially with cervical caries may cause a sudden termination by rupture into the cord and pressure in the cervical region.

Anaphylaxis

This is a rare cause of death. Park found in reviewing 350,000 cases treated with diphtheria antitoxin that one in 70,000 died suddenly.

Larson could find but forty-one instances of anaphylactic death in the literature extending back twenty-eight years.

Status Lymphaticus

Symmers, who has had an extensive post-mortem experience, reports 8 per cent of 5,000 Bellevue autopsies showing these stigmata. He discusses sudden death in this condition. He has never seen a thymus large enough to compress the trachea and so cause death. He thinks the minute multiple lymphoid necroses indicate that anaphylaxis is often the cause of death. Not an inconsiderable portion of these cases, however, die from spontaneous rupture of the thin-walled cerebral vessels. He reports seven sudden deaths of this nature, all under thirty years, without the signs of syphilis or arteriosclerosis. Many status deaths might, therefore, be properly classed under vascular accidents.

Paracentesis

Puncture of the various body cavities is fraught with danger. The pleural cavity is the most dangerous, the peritoneal the least. Various reports are to be found in the literature. Lichtenstern collected twenty-three cases, Fox twelve, and Russell three. Capps has written extensively on the subject. There are several explanations (1) pleural reflex to heart and vessels; (2) air embolism; (3) pneumothorax; (4) lung injury with edema and congestion. Death frrom pericardial puncture is due chiefly to injury of the auricle.

Rachicentesis

In 1916, Schonbech compiled seventy-one deaths from lumbar puncture. There are two causes: (1) sudden pressure changes jamming the medulla in the foramen magnum; and (2) reflex cardiac inhibition.

Sudden death, as pointed out under paracentesis and rachicentesis, may be a reflex phenomenon to the vagus. Such an explanation accounts for those rare but unquestionable cases of unexpected death occurring from fright, joy, drinking cold water, during the examination of the vagina, urethra or esophagus, or from a blow on the neck, epigastrium or hypergastrium. Such trivial occurrences as pulling a tooth, opening a boil, or a flea-bite, may cause sudden death.

Heat and Cold

Heatstroke and sunstroke cause sudden death. Exposure to cold may have a similar result, especially in alcoholics.

Many cases of sudden death cannot be explained in the light either of clinical or autopsy findings.

Classification of Thirty-Four Autopsies in Sudden Death

Heart

Myocarditis.—An apparently healthy young soldier was found dead in bed with nothing to explain it. The autopsy showed chiefly a diffuse myocarditis with numerous round cells throughout the muscle. Other findings were a fatty liver and congestion of all the viscera (cf. Warthen's eight cases from syphilitic myocarditis).

Angina Pectoris.—Male, 37, with negative Wassermann, complained of pain under sternum for a few days, sent to bed, got better and went to work. Suddenly taken with violet precordial distress and died. Autopsy showed extensive coronary disease, the posterior coronary artery at its origin being almost completely occluded.

Coronary Infarct.—Male, 58, admitted to hospital with extreme cyanosis, dyspnoea, pain in chest, rapid, irregular pulse. Died in forty minutes. The autopsy showed an extensive infarct of the left ventricle and advanced coronary disease.

Hemorrhage

Cerebral.—(A): With immediate death because of (a) size of hemorrhage (b) basal location.

1. Male, 50, suddenly falls dead without previous history. The autopsy showed extensive basal hemorrhage. There was also a grape size aneumrysm of the middle cerebral artery.

2. Male, sudden death. No history. The autopsy showed massive subdural hemorrhage.

3. Male, 53, fell dead at work (Berlin). The autopsy showed extensive hemorrhage into the pons and into the third and fourth ventricles. There was also syphilitic aortitis.

4. Female, 52, no history (Berlin). The autopsy showed massive hemorrhage into pons, medulla, and mid-brain; also aneurysm of aorta and arteriosclerosis.

5. Female, 32. After suffering for some time with headache, speech defect, and optic edema, she was taken to hospital and operated upon for sinusitis. Few hours later, became suddenly unconscious and died. Autopsy showed

large tumor on left side under the corpus callosum. Hemorrhage had occurred in the tumor, rupturing into left lateral ventricle.

Cerebral—(B): Slower, due to smaller hemorrhage in less vital location; death in a few hours or days.

1. Male, 70 (?) had sudden dizziness on lifting heavy weight. Unconsciousness in one hour. Death in twelve hours. Autopsy showed hemorrhage into left optic thalmus and lateral ventricle. Arteriosclerosis. Hemorrhagic cystitis. Coronary disease.

2. Male, 35, found dead in bed. Autopsy showed large hemorrhage into right centrum ovale and the basal nuclei. Edema of scalp indicated some hours of life after hemorrhage.

3. Male, 22, fell unconscious while at telephone. Died in twenty-eight hours, after a short lucid interval and several convulsions. Autopsy showed hemorrhage into right lateral ventricle. Softening in Island of Reil.

4. Female, 35, became suddenly unconscious. Died in coma after six days. Autopsy showed hemorrhage into fourth ventricle and left crux cerebri (small).

5. Woman, 35. Husband has syphilis (Berlin). Autopsy showed hemorrhage into right cerebral hemispheres.

Other Blood Vessels

Large with Immediate Death.—Rupture of the Aorta.—An apparently well negro soldier suddenly fell in his tracks, coughed up an enormous amount of blood and died. The autopsy showed syphilitic aortitis and an aneurysm of the aorta which had ruptured into the left primary bronchus.

Rupture of Pulmonary Artery.—Male, 50, entered hospital for loss of weight and pain in chest. Diagnosis of cancer of the stomach and esophagus made. Died two weeks later very suddenly. The autopsy showed the stomach full of blood and a large cauliflower growth on the stomach wall which had eroded the right pulmonary vessels.

Small with Slower Death.—Ruptured Ectopic.—Female, 35, found dead in bed. Autopsy showed the abdomen full of blood and a ruptured ectopic pregnancy (about 3½ months).

Ruptured Esophageal Varix.—Male, 32, with enlarged spleen and history of syphilis, suddenly vomited blood and died in twelve hours. At autopsy there was a syphilitic liver, enormous spleen and ruptured esophageal varices with blood in the stomach.

Occult Intestinal Hemorrhage.—Male, 23, history of dark stools, fainting and death. At autopsy, with the exception of the stomach and duodenum, the whole intestinal canal was full of blood (900 c.c.). Prolonged search failed to show any break in the mucous membrane.

Abdominal Hemorrhage.—Two hours following the tapping of a case of ascites the patient was found in collapse. Death occurred almost immediately. A tap of the abdomen after death showed that the contents were now blood.

Pulmonary Embolism

1. A young soldier recovering from pleurisy died suddenly. At autopsy both pulmonary arteries were found plugged by a clot. There was an organizing pleurisy over the right lower lobe.

2. Female, 31, no history. The autopsy showed perforated appendix (operated). Femoral phlebitis and embolus in the right pulmonary artery.

3. Sudden death occurred in another case in the course of recovering from appendicitis. At autopsy embolus in pulmonary artery.

4. Sudden death occurred in still another patient recovering from appendicitis. Autopsy showed embolus in pulmonary artery.

Status Lymphaticus

1. A ten months' old boy was being seen daily with a moderate case of whooping-cough. A few hours after last visit, he suddenly died. The autopsy showed well-marked signs of status lymphaticus and no other cause for death. The thymus weighed 25 gms.

2. Female, 26, pupil nurse at Presbyterian Hospital, New York City, while eating breakfast, suddenly fell back dead. Autopsy revealed a typical status lymphaticus. Thymus weighed 35 gms.

3. Male, 30, died suddenly after taking a dose of salts. A friend had taken same dose without harm. The autopsy showed a well-developed status lymphaticus with an echinococcus cyst of the liver.

4. A two months' old boy at autopsy (Berlin) showed small hemorrhage in thymus, heart, pleura. Thymus 25 gms.

5. Female, 23, in good health, in a contention with a man at 3 A. M., became violently angry and dropped dead. The autopsy showed

a well-marked status with a small aneurysm of the cerebral vessels which had ruptured. Hemorrhage was in ventricles and at the base, compressing the medulla. This should also be classified under cerebral hemorrhage.

On Operating Table

Male, 35, suddenly died while a perforated gastric ulcer was being sutured. At autopsy no other cause of death was disclosed.

Formalin

Male, 35, drank four drams of formalin by mistake. Immediately had a severe pain in the stomach and died. The autopsy showed the stomach swollen, pink, and fixed.

Heat Stroke

Male, 48, large, fell suddenly dead, with a diagnosis of heat stroke. The autopsy showed edema of the brain.

Alcoholism

1. Woman, 40, found dead. Autopsy showed fatty liver.

2. Woman, 35, found dead in park. Autopsy showed extremely fatty liver.

Summary.

				Number	Per cent
Heart				3	9.9
Myocarditis	(1)				
Angina pectoris	(1)				
Coronary infarct	(1)				
Hemorrhage				17	48.5
Cerebral			11		
Immediate (base)		6			
Slow		5			
Other			6		18
Immediate—aorta	(1)	2			
Pulmonary artery	(1)				
Slow—ectopic	(1)				
varix	(1)	4			
occult intestinal	(1)				
abdominal injury	(1)				
Pulmonary Infarct				4	12
Status Lymphaticus				5	18
Children	(2)				
Adults	(3)				
Operating Table				1	3.3
Formalin				1	3.3
Heat Stroke				1	3.3
Alcohol (2)				2	6.6
				34	

Sudden Death by Age.

	Number			Per cent	
Baby	2			5.9	
10-20	0			.0	
20-30	9	22	26.5		64.
30-40	13		38.2		
40-50	4	9	11.8		26.4
50-60	5		14.7		
60-70	1			2.9	
				100.7	

Autopsy Experience in Interpreting Clinical Death

Sudden death is a common occurrence. Sudden death followed by an autopsy is not common. How is the average doctor to know the cause of death without an autopsy? The history is extremely valuable, but without a knowledge of the post-mortem findings in a large series of sudden death, this will rarely satisfy the honest mind. One often wonders what per cent of death certificates of sudden death are correct.

To show the difficulty, a man about 70, with arteriosclerosis and chronic nephritis, began to get very tired and weak at his work. Blood pressure was 130/80. He was put to bed and improved. After about a week, his wife heard a heavy fall, rushed into his room and found him dead. No autopsy. We could not conscientiously sign a death certificate. The coroner without autopsy glibly wrote—cause of death—"organic heart disease." What did he mean? Rupture of the heart, angina pectoris, coronary infarct, ventricular fibrillation? There was no evidence for any. On the basis of statistics, the probabilities are that he had a cerebral hemorrhage, massive and basic, putting his respiratory or cardiac center out of commission. In favor of this are his age, arteriosclerosis and the fact that 33 per cent of our 34 cases died of this cause.

A woman, 38, had headache, nausea, vomiting and blindness, with blood pressure 210/140, albuminuric retinitis, albumen and casts in urine, blood urea 40 mgm. per 100 c.c. phthalein 50 in two hours. After several weeks' observation in the hospital, she suddenly, while in bed, became unconscious, breathed stertorously, and died in a few minutes. No autopsy. The Board of Health was satisfied with a diagnosis of chronic neiphritis, but who knows the cause of death?

MERCURIAL POISONING FROM LOCAL APPLICATIONS OF MERCURIAL OINTMENT.—REPORT OF CASE.

By CHARLES H. LUPTON, M. D., Norfolk, Va.

E. M., female, white, married, aged twenty-four, suffering from what she thought to be several patches of ring-worm of the body, was advised by her brother, a druggist, to use mercurial ointment. On March 27, 1925, she secured three ounces of mercurial ointment and

applied the entire amount to her body, followed several hours later by a hot bath. On March 28th, she painted the patches with tincture of iodine. On March 29th, she secured an additional two ounces of mercurial ointment and applied the entire amount to her body as she had done on the previous occasion.

I was first called to see her on March 30, 1925. At that time she was suffering from considerable pain of the face and mouth; the whole face was swollen, but most markedly on the left side. There was some swelling of the buccal mucous membrane, and there was tenderness around the teeth. On March 31st, she had developed a mild stomatitis, and late in the afternoon she developed colicky pains in the abdomen, tenesmus and melena, with a temperature of 99.2. The urine showed a trace of albumin and many red blood cells to the field. Although there was pain in the kidney regions, the output of urine remained within normal limits. The urine continued to show a trace of albumin with some red blood cells for a number of days, but it was entirely normal on April 7, 1925. The swelling of the face and intestinal symptoms had disappeared by April 3, 1925.

Sodium thiosulphate was given when the patient was first seen and continued until symptoms disappeared.

This case is reported because it is rare, also with the hope it may impress upon anyone who orders drugs without specific instructions as to the seriousness of their acts, and so that we may realize the ever present menace of prescribing by druggists.

THE NASAL ACCESSORY SINUSES.*

By G. M. MAXWELL, M. D., Roanoke, Va.

Let other poets idly sing
Their songs of love; to you I bring
A song of something that's worth while;
And though at times mayhap you'll smile
And shake your head, and maybe laugh
And say, "That's rot, or only chaff;
Yet if you'll follow me on through
I'll try to bring something to you
To make you stop and think a bit
As to the truthfulness of it.
I'll take you rambling in and out
Among the caverns of your snout
Or nose, or whatsoe'er you call
That part of you which first of all
Comes in a room when you come in
Is flattened out whene'er you grin,
Is often into trouble thrust,
Sifts daily pounds and pounds of dust,
Stands sentinel unto your lung,
Yet seldom has its praises sung.
We sing the praises of Luray,
And thousands coming every day
Go walking through them, in and out,
And from the hills their praises shout;
But very little mankind knows
About the caverns of the nose,
More wonderful in every way
Than any caverns of Luray.
They do a very wondrous part
In guarding both the lungs and heart
Against the inroads of the bugs
Which constantly invade our mugs,
And make a constant fight to gain
The mastery, and cause us pain.
From out their depths there daily flows
Five pints of fluid to the nose
To keep it moist and clean and fit
To fight the germs that tackle it.
'Tis little wonder, then, that they,
Thus working on from day to day
And never resting in the night,
Become diseased and lose the fight
Against the enemies of man,
Though they may strive the best they can;
They too get sick along with you,
And then they need a doctor too.

When any one, or young or old
Is taken with a sudden cold,
Such as we term acute rhinitis,
He has in truth a sinusitis;
And if we only had a way
To open up the passageway
Into the sinus and wash out
The germs in there, we'd put to rout
The cold at once, and we may say
We'd cure a cold in one short day.
But here is where the trouble lies,
These sinuses surround the eyes,
Lie very close about the brain,
And as we there an entrance gain
We're apt to slip a probe on through
And have a little scare or two;
Or maybe something even worse—
An undertaker with his hearse.
And so it well behooves a man
To study out the best he can
Just where the normal ostium is;
In fact, to make it his own "biz"
To know the caverns in and out;
In fine, to know what he's about
Before he ventures to explore
These sinuses through wall or floor.
In one man, they may be quite small
Another, almost none at all;
And so we must use every care
To be sure we've a sinus there.
If it is there, then it remains
To see if it some pus contains;
If pus, what kind—if foul, or sweet,
And so at every turn we meet
Some further puzzle to unravel
As through the sinuses we travel.
We transillumine, use X-ray
And search around in every way
To see which sinus is involved,
Yet never get the puzzle solved.

I had a patient with an antrum
That sometimes threw him in a tantrum,
And then again he'd go entirely blind:

*Read before the Southwestern Virginia Medical Society, at Roanoke, Va., March 31, 1926.

I tried all kinds of doping
Without entirely coping
With the trouble, 'till I thought I'd lose my mind,
When the thought was brought to me
In a paper by Dupuy,
That the antrum in itself was not at fault,
But simply by location
Was full of suppuration
From other sinuses up in the vault.
I stirred up quite a muss
In hunting for the pus
That was filling up the antrum day by day,
The work of some vile bug
Somewhere within the mug,
Thus hoping I might drive the pest away.
I cleared the ethmoids out,
Put the turbinates to rout,
Rasped the frontal and the sphenoid, 'till the nose,
Bereft of all its tissues
And with a lot of fissures,
Was open as a piece of rubber hose.
The pus kept rolling on
'Till hope was almost gone—
The patient and myself in deep despair—
When there flashed on me the truth
That the fault was in a tooth,
So I had it pulled, and found the trouble there.
The lesson in this, then,
Of use to all you men,
Is, don't jump hastily to a conclusion,
But study every case,
Nor hurry in the race,
And make your diagnosis by exclusion.
A moral lies here too,
Of use to all of you,
That men, like sinuses, are blamed a heap
For the things their neighbors do,
And so it's up to you
To be careful of the company you keep.

Your diagnosis made,
By calling to your aid
The X-ray, dentist, lights and symptoms, all;
You're only half way done,
Your trouble's just begun;
Beware, then, or your feathers yet will fall.
An antrum don't get well
At once; and if you tell
The patient that it will, you will regret
The promise which you made,
For moons will come and fade
Before a real good result you get.
Sometimes one irrigation
Will help it, like the nation,
And sometimes three or four will bring a cure,
But antrums once infected
Should never be neglected,
And of a final cure you're never sure.

The operative measures
Once held by us as treasures
And thought to cure an antrum right up short,
Have fallen in disuse
Through very much abuse—
Are only used today as last resort.
The irrigation plan
Appeals to every man;
The patient and the doctor like it best—
It's almost free from pain
And if results it gain,
Why should it not now supersede the rest.

Of course, if one's annoyed
With pus in the ethmoid,
We can't go in; but if the nose is packed
With silvol every day,
Much mucus comes away
And brings the pus out through the normal tract.
If the sphenoid is involved
The puzzle's not yet solved,
And we may have to operate at last.
But even if it's there
We ought to use due care
And treat it 'till the acute stage is past.
The modern flurry, noise and fuss
Of hunting everywhere for pus
At root of tooth, in ethmoid bone
And everywhere, is surely prone
To make one crazy over bugs
And to forget about the drugs
His forbears used in form of pills
To cure a hundred thousand ills.
So, then, of therapeutic measures
We have some tried and trusted treasures,
There's nothing like some calomel,
When one has lost his sense of smell
From ethmoiditis, or a cold,
It then is worth its weight in gold;
And nothing with it can compete
If you the tissues would deplete.
The coal tar preparations too
Are still used by a few of you,
And each one has some virtue still
Although by some they're counted nil.

The surgeon who now sets aside
These drugs that one time were the pride
Of those old therapists of old,
Who won with them battles untold
Against disease of every kind,
In bone and muscle, heart and mind,
Will some day 'wake to find that he
Has lost his opportunity
Of building for himself a name
To be carved in the hall of fame.

The serums, too, are of some use,
Though they have suffered much abuse
By some who, without rhyme or reason,
Have knocked them in and out of season,
And really haven't tried to see
If in them any virtue be.
This much I'll say with firm conviction
Without much fear of contradiction,
Whate'er be said of them in jest,
They stand the scientific test,
And he who'lines himself with science,
Will never make a bad alliance.

The problem facing all of us
Is, how to rid ourselves from pus;
That gets a hold and grows and grows
And causes almost all our woes;
And he who tries one single plan
Will ne'er succeed. He never can.
But he who carves and stimulates,
Depletes, and then evacuates,
And immunizes as he goes,
May overcome this worst of foes.

Shenandoah Life Building.

PLACE—Norfolk, Virginia.

DATES—October 12, 13, 14 and 15.

OBJECT—Fifty-seventh annual meeting of Medical Society of Virginia.

BE SURE TO ATTEND.

Miscellaneous

Dr. Henry R. Carter, U. S. P. H. S., 1852-1925.

On August 10, 1926, Hanover County, Virginia, honored twelve of its most famous sons. On this occasion, in the midst of a large gathering, portraits of these men were unveiled in the county court house, appropriate ceremonies being held. One of these portraits was that of Dr. Henry R. Carter, to whom the world owes an incalculable debt of gratitude. Without his preliminary work, the conquest of yellow fever would have been delayed, no one can say how long. The following brief sketch is an autobiography prepared by Dr. Carter in response to an official request for the files of the United States Public Health Service. It is an unemotional narrative of a great life, and undobtedly will be of interest to the medical profession of Virginia, his native State.—(*Editor*).

Henry R. Carter was born in Virginia in 1852 and lived on his father's plantation until he went to college. This was the University of Virginia, where he pursued a scientific course—paying special attention to mathematics—and graduated in 1869 in engineering.

Owing to a broken leg, the prognosis regardgarding which was permanent disability, he did not continue in this profession, but began the study of medicine—teaching for three years, one as Assistant in Applied Mathematics in the University of Virginia, before going to medical school. He graduated in medicine at the University of Maryland and also served one year as interne in the University Hospital, Baltimore, leaving it 1879.

He entered the Marine Hospital Service May 5, 1879.

The first detail was Boston. In July he was ordered to Cairo, Ill., and in the fall saw his first yellow fever. After Cairo he served in Memphis, New Orleans and San Francisco doing, except a little epidemic work while in Memphis, the ordinary work of an officer at hospital stations of the first and second class.

In January 1888 he was ordered to Ship Island, the quarantine station of the Gulf, to relieve Surgeon Robt. Murray, with whom he had previously served in Memphis. This really was the beginning of his service.

Ship Island was the refuge station to which came all vessels infected, or probably infected, with yellow fever bound for any Gulf Port, except New Orleans—which handled her own infected vessels. It handled many and a bad class of vessels—sailing ships from Rio, Santos, Havana and Colon which, at that time, were especially dangerous.

The conditions of work at this station were especially difficult. There was no certainty about it. There were no regulations for the conduct of the station and when one began to formulate them he was confronted with the absence of reliable data on which to found them. It is true that there were quarantine procedures in operation at all tributary ports from Apalachicola to Galveston, but they

Dr. Henry R. Carter, U. S. P. H. S., 1852-1925.

were all different. In disinfection, for instance—New Orleans laid most stress on steam disinfection of clothes and wetting the ballast with bi-chloride solution; Pensacola, with apparently very little faith in any disinfection, on the discharge of ballast and white washing the hold. Fortunately all used sulphur fumigation.

The periods of detention in quarantine were also different for each port of entry, and for New Orleans different for different ports of clearance. It varied in the Gulf Ports from 3 to 21 days or until after frost. Nor, although all required detention and certain processes

called disinfection, was there any relation between the detention of the personnel aboard and the disinfection of the vessel. The detention dated — days "from date of leaving last infected port" or "from date of arrival in quarantine" or "from date of inspection by quarantine officer," etc. In no case was any relation predicated between the date of disinfection of the vessel and the detention of the personnel. It was a problem then to determine what was efficient, justifiable quarantine.

Moreover, the work of this station was valueless unless its pratique was accepted at the port of entry of the vessel bearing it, and in the past that had been far from universal.

It was necessary, then (1) to find out what was necessary to make an efficient and reasonable quarantine, especially what was the minimum period of safe detention, for detention is to a vessel the expensive part of quarantine.

2. To get the confidence of the Boards of Health of the Gulf Ports in the work of the station so that its pratique might always be taken. For this last it was at times necessary—especially at first—to do things in treating a vessel judged unnecessary by the subject of this sketch.

3. To induce the Boards of Health to waive the plainly unnecessary requirements both of treatment and detention of vessels, in other words, as far as possible to render uniform the quarantine requirements of the Gulf Ports.

4. To conduct the station with minimum expense to vessels so that they would come to Ship Island by preference, when preference was allowed. This was to increase the usefulness of the station by increasing its clientele.

From such data as he had Carter tentatively deduced—wrongly indeed—that five days fully covered the maximum period of incubation of yellow fever and made it his period of detention. He counted this period, however, from "the completion of disinfection of a vessel; the last exposure of her personnel to infection."

He had also been convinced, at the end of the third year, that sulphur fumigation by pots was efficient by itself to destroy infection of yellow fever aboard ships, although this method of treatment was looked upon as unreliable by the scientific sanitarians of the time.

He had, then, regulations consistent and founded on the best data obtainable, under which, although some unnecessary measures were taken, a safe quarantine was conducted.

Carter remained at this station four and a half years, by the end of which time the above desiderata (especially the 2nd, 3rd and 4th) had been measurably carried out. Incidentally this was, I think, the beginning of the maritime quarantine of the Service. The station had previously no principle of growth in it. White, at Sapelo, was doing much the same work for the South Atlantic ports. These stations—Sapelo and Chandeleur—were in constant correspondence.

Here Groenvelt—a most promising young officer—died of yellow fever, sickening after a few days' service. Why Carter did not contract it, it is hard to say. Only three others not immune to yellow fever were employed at the station during these four and a half years and they all contracted it.

The radical innovation in the Ship Island regulations of '88 was not in prescribing any special method of disinfection or in fixing on a special period of detention for personnel, but in counting that period from the completion of disinfection of the vessel. At this time the regulations of all United States ports which quarantined against yellow fever—I think of all United States ports—dated this period of detention from "the date of leaving the last infected port" or "the date of arrival in quarantine," etc. In no case was any relation predicated between the date of disinfection of the vessel and the time of detention. How so obvious a principle—the very pivot of a quarantine of disinfection and observation of personnel—could have been missed it is not easy to see, but missed it was. Not only the regulations of the United States ports were as quoted, but the same was true of the regulation of such British ports in America as quarantined against yellow fever. Not until after the United States regulations became mandatory was this principle universally applied in this country.

In order to determine the period of detention of personnel it was necessary to know the period of incubation of yellow fever. For this there was no satisfactory data in existence—he had access to a good special library. He set himself, then, to determine it; taking this, if necessary, as his life's work—it being, at that time, a very important problem in maritime quarantine. This work was not completed until 1901—twelve years afterwards.

While working on this, another very puzzling phenomenon presented itself. Just as there was a period of incubation in the man

which must be passed before the infection became manifest, so there seemed to be a period of time through which the ship must pass before its infection became manifest—in the only way it is ever manifest—by being able to convey yellow fever to man. In other words, "after a ship becomes infected a considerable period of time must elapse before it becomes infective"—11 to 18 days was the first tentative determination.

We know well what this means now, but it introduced a very troublesome factor in his attempt to discover the period of incubation in man. Indeed, it was a long time before Carter was able to formulate the above as an explanation of his observations and then it was rather by intuition. It was an allowable, but not a necessary, deduction from his observation. As the observations accumulated he became convinced absolutely, but others equally well able to judge were not convinced. Not until he had the data from the country-epidemics of Orwood and Taylor in 1898 did he feel that he had convincing proof—evidence convincing to other people. He used this principle, however, in the suppression of some epidemics, especially at McHenry in 1898 and elsewhere, and to a knowledge of it the suppression of that epidemic was due.

From the Gulf quarantine, after a short service at Cape Charles and Sapelo quarantines and at Cincinnati, Carter was ordered in the summer of 1892 to Cape Charles quarantine, which was to be prepared to provide against cholera, then prevalent in Hamburg. He fitted up the station and moored the U. S. S. Jamestown, which, I believe, is still in commission there. He remained in charge of the station until cold weather, handling a number of passenger steamers from cholera infected ports.

The next service to be noted was in the Brunswick epidemic in 1893. Carter went down from Washington, June 15th, to investigate, and remained to clean up after a case of yellow fever that had been reported on the Satilla River, south of Brunswick. On his, Carter's report of conditions at the Quarantine Station and recommendations, it was surrendered to the United States, under the Act of February 15, 1893; the first station to be thus surrendered. The influence of this action was a decided factor in similar action in regard to the stations of Fernandina, Savannah, Charleston and Pascagoola, and, I presume, for the Act of 1906.

In this epidemic Branham died of yellow fever—a fine officer; of a great force and high character. The sacrifice of his life was abundantly paid for by saving this section of the South from a much wider spread epidemic than occurred. He had been on the station about seven days when he contracted the fever.

Following the Brunswick epidemic the winter was spent at the bureau and in installing the Brunswick Station. In the spring he was ordered to the Dry Tortugas—the pleasantest quarantine station in the South; although somewhat isolated.

In consequence of the destruction of Chandeleur—the quarantine of the Gulf—October 2, 1893—Tortugas was to be used as the refuge station for Gulf ports until another station could be installed at Ship Island. There was, thus considerable work here and, on account of the proximity of Havana, which was then badly infected, a considerable number of vessels with yellow fever. Indeed, this station treated this year more than twice as many cases of yellow fever as all the other stations in the United States combined.

In 1890, Carter had proposed the disinfection of vessels from Cuban and Mexican ports at the port of departure or en route, so that the time en route to the port of entry after such disinfection could count as observation of personnel and by so much lesson the time of the detention of the ship in quarantine. He had especially advocated the use of Tortugas for vessels from Havana coming into the Gulf. He was now able—much to his gratification—to put this plan into practice. How this method has been developed there is no need to tell. It is the key to our maritime sanitation.

Waiving two summers spent inspecting the Southern quarantines and looking after refugees from the North Coast of Cuba, the next two and a half years were spent ashore on hospital duty.

When, in the summer of 1897, yellow fever was reported at Ocean Springs, Carter was ordered from Chicago to that point and, reporting to Surgeon Murray, was engaged in sanitary work in that neighborhood until fever was declared in New Orleans. He was then put in charge of the Service work in Louisiana and Mississippi—except the Mississippi Coast. This was to arrange for transportation from and through the fever infected districts and

to assist the health authorities in preventing the further spread of the fever. The work was mainly pioneer work and the whole district and surrounding country was in a very unsettled and unsatisfactory state. Yet, on the whole, the work was smooth and successful. He counts it, however, the most onerous of all his details. In this epidemic Carter, himself, contracted yellow fever, but it was late—November 18th; the epidemic was over; quarantine was raised, and no special inconvenience was caused by his illness.

When the post-epidemic work was over, there being reason from the mildness of the winter to fear a recrudesence of the fever, Carter was ordered to the New Orleans hospital so as to be on hand if needed. The winter and spring were consumed at various conferences trying to arrange for uniformity of method in handling epidemics; train inspection, passenger traffic, etc.

Early in June yellow fever was discovered at McHenry—a small town in Southern Mississippi. Carter represented the Service in assisting the Mississippi Board in (1) Confining it to McHenry, (2) Eliminating it from that town. The measures taken were of the most vigorous character and he was given a very free hand both by the Department and his Mississippi coadjutors, for with yellow fever fairly epidemic in an inland town so early in the season the danger of a widespread epidemic was considered extreme. These measures were successful and the fever was eliminated from McHenry.

This was, I think, the first epidemic of yellow fever to be suppressed in the South in the summer time.

Later in the summer Carter was under orders for Santiago de Cuba when yellow fever was reported at Franklin, La., then in Taylor, Orwood, and Jackson, Miss., and finally in New Orleans. His orders were cancelled, and he took charge of these outbreaks as they occurred and finally of the infected district as a whole, so far as United States work was concerned.

In this epidemic, although it was widespread, the work was far easier than in 1897, because there was a feeling of confidence in Service measures and a reasonable uniformity of requirements of the Health Authorities.

In January, 1899, he went to Cuba as Chief Quarantine Officer of the island, in charge of all maritime sanitation of Cuban ports for both incoming and outgoing vessels, except those of the Province of Santiago de Cuba.

At Havana he was able, with a good fumigating plant, to put in operation on a large scale, the plan of disinfection at the port of departure and counting the time in transit as observation of personnel so as to have short, or no, detention at the United States port of entry for her personnel.

He also served on the Board for the Diagnosis of Yellow Fever; Carlos Finley, Gorgas and, later, Juan Guiterras, being also members—men with whom it was both a pleasure and an honor to be associated.

This position was held about eighteen months, although Carter spent the fall in the United States engaged with epidemics at Key West, New Orleans and Jackson, Miss. In the Key West epidemic died Assistant Surgeon McAdams—a young man of the highest promise. He did most excellent work in the short time before he was taken ill.

During the winter he wrote, from his Taylor and Orwood notes, the brochure "The Interval Between Infecting and Secondary Cases of Yellow Fever;" which Reed (and Lazear) said led him to believe that yellow fever was conveyed by a host and thus led to his experiments which proved it true. The brochure "Extrinsic Incubation of Yellow Fever" was written some months later.

Leaving Cuba in 1900 on account of ill health—Memiere's Disease—the disability from which was considerable, Carter was in charge of hospitals in the United States until May, 1904, when he was assigned as Chief Quarantine Officer to the Isthmian Canal Commission.

He served in Panama, first in that capacity organizing the quarantine service and later, from December 23, 1904, as Director of Hospitals—the second position in the Sanitary Department to that of Dr. Gorgas, and in charge of all organization for "Public Assistance." He remained with the Commission for over five years and was concerned with much of the organization and early work on the Isthmus.

While on this detail Major Ronald Ross—himself a recipient of the Prize—presented his name conjointly with that of Finley for the Nobel Prize on the ground that the work done on the "Extrinsic Incubation of Yellow Fever" was the foundation on which Reed's rested and gave him the clue which led him to make the

direct experiments which produced such brilliant results. Mr. Roosevelt received the Nobel Prize that year for America.

Since returning to duty with his own Service Carter has had no detail worthy of note, except, possibly, an inspection of the Immigration work from Havre to Libau in connection with the regulations of February 15, 1893. In 1910 the University of Maryland conferred on him the degree of LL. D.

Last fall he was ordered to Honolulu for sanitary work, but before he could go, he was taken sick with what was diagnosed as typhoid fever. This was really syphilitic fever from an infection contracted in 1892 during a surgical operation. The diagnosis was not made until the fifty-sixth day of the fever and he has not yet recovered entirely from the effects of this long illness.

He has been a delicate man all his life and frequently sick, yet his disabilities have come conveniently so as not to interfere with his work and this is the only time that one has prevented him from carrying out an order.

This sketch exemplifies how a man who was very fond of the practice of medicine and whose only ambition was to make himself a good internist was led, by force of circumstances, to devote his life to sanitation.

Sanitary work at first was very distasteful to him and the life it involved especially onerous, yet he saw the importance of it and he clearly saw that only as a sanitary service could his Service expand—and that the possibilities of expansion as such were great. Although he did not, at first, look farther than its administration of a National Maritime Quarantine System. Not only at his own station did he strive to develop this work, but he pressed the matter on the attention of others who might help—commercial bodies; ship owners; certain boards of health, etc., as well as on that of other officers of the Service and the Surgeon-General—on the latter probably at times out of season. As the sanitary work of the Service increased, having had some experince, he was sent on a number of such details—which were little sought after—with the result that he gradually drifted into the sanitary division of the Service—at that time almost exclusively maritime and tropical. This of course, was proper as with increase of experience he became more suitable for such work.

His life has been less happy than if he had remained a hospital man, yet it has been a much more satisfactory life. He believes that he has been of more service to the world and to his Service than if he had continued as a practitioner of medicine. Looking back on his life these are some of the things which give him most satisfaction:

1. The institution of a rational relation between the disinfection of vessel and the disinfection of her personnel.

2. The measure of uniformity he was able to introduce in the quarantine requirements of Southern ports. This led them to accept more readily the United States requirements of 1893.

3. His part in the disinfection of vessels at the infected port of departure, or en route, so that the time en route would count as time in quarantine.

4. The surrender of the Brunswick Quarantine Station to the Service—as being the first quarantine so surrendered and a factor inducing similar action by other local quarantine authorities.

5. His executive work in yellow fever epidemics—the crown of which was the suppression of the McHenry epidemic in 1898.

6. The determination of the "Period of Extrinsic Incubation of Yellow Fever." This was the determining factor leading to Reed's demonstration of its conveyance by mosquitoes. This is by far the most valuable piece of work with which he can be credited.

It is also a great gratification to him to have borne part in the work on the Panama Canal. Of the work of its Sanitary Department he may say with the Greek historian: "All of which I saw and part of which I was." It was work well worth a man's doing.

Correspondence

The Danger of Using Other Than the State Solution of Nitrate of Silver in Infants' Eyes.

August 25, 1926.

To Virginia Doctors:

The Virginia Bureau of Vital Statistics, which is intrusted with the free distribution of a 1 per cent solution of Nitrate of Silver in wax ampules, for use in the eyes of the newly born, had attention called recently to the danger of using other preparations.

A physician came into the office for a supply of ampules, and reported a case of severe conjunctivitis with corneal ulcer following the use of a druggist's solution. He consented to send

the remainder of the solution to the office of the Bureau. This was submitted to the State Chemist for analysis, who reports that it is a 10 per cent solution of Nitrate of Silver, and that the accuracy of the finding was verified by three different men.

In another case, the physician used a hospital solution, and had a severe case of opthalmia neonatorum on his hands, with a resulting suit for damage. He was not able to secure for us a sample of this solution for analysis.

These cases are cited as warnings to the profession to take no chances, but to play safe and use only the solution for which the State is responsible. A company which insures physicians against malpractice suits and undertakes the defense in these cases, advises us that they will not consider themselves liable when the suit, as in these cases, is due to failure to comply with the State law, which calls for the use of the solution "prescribed or furnished by the State Board of Health."

Cases of ophthalmia neonatorum are to be reported by midwives to a member of the local Board of Health or to other physician, who will institute prompt treatment. They should also be reported to the State Board of Health through the Bureau of Vital Statistics.

Complete reports are probably not available, but only about half a dozen cases of ophthalmia neonatorum have been heard of since the passage of this law in 1918. The fact should not be lost sight of that by tests made in one of the large cities only about 40 per cent of cases of ophthalmia neonatorum were found to be of gonorrheal origin, the rest being due to pneumococcus, streptococcus, diplobacillus, colon bacillus, and staphylococcus. It is therefore never safe to presume that because gonorrhea is absent, there is no need for the prophylactic.

W. A. Plecker, M. D.,
State Registrar of Vital Statistics.

Methods of Vaccination.

To the Editor: September 2, 1926.

Now that schools are opening, many children will have to be vaccinated against smallpox. We strongly recommend to the readers of the Monthly the new methods, a description of which follows. The great advantages are that there is far less chance of infection and an equal, or better, chance of a "take."

1. Cleanse skin in vicinity of the insertion of the deltoid muscle with soap and water and alcohol, or ether, then allow to dry.

2. Drop of virus is placed on cleansed site.

3. A sterile needle held almost parallel with skin is gently pushed through the vaccine into top layer of the skin for about one-eighth of an inch. This is repeated twice. The skin is not pierced, no blood is drawn, there is no pain. (Canadian Method).

or (3). The arm is held horizontal with the skin made taut by the left hand, and a sterile needle is held in the right hand with the forefinger and middle finger above the needle, the thumb below the needle pointing to the operator's left. The side of the needle is then rapidly but firmly pressed into the drop about 20 times, the needle being raised clear of the skin after each pressure. The needle should be held parallel with the skin and the motion should be perpendicular to the skin. The skin is not pierced, no blood is drawn, there is no pain. (U. S. Public Health Service).

4. Wipe remaining virus off with sterile gauze and do *not* cover with a dressing.

Ennion G. Williams,
State Health Commissioner.

The County Society

Delegates for State Meeting.

With a view to arousing and maintaining interest in the COUNTY SOCIETY, it is requested that, as far as possible, every county in the State should have a county society.

Any county with three or more eligible physicians may organize and apply for a charter from the State Society, thus securing the privilege of representation in the House of Delegates of the State Society at its annual meetings.

Only one component society shall be organized in any county.

County societies which have been inactive should re-organize. Upon request, your Councilor, the President or Secretary of the State Society will help in any way possible.

Inquiries addressed to the MEDICAL SOCIETY OF VIRGINIA, 104½ West Grace Street, Richmond, will have prompt attention.

Do you know that fellowship in the American Medical Association, the largest association of its kind in the world, is dependent upon membership in your State Society, and that membership in your State Society is dependent upon membership in your County Society?

Each County Society shall have general jurisdiction over the medical matters in the County.

Dues in the State Society are five dollars a year, the fiscal year beginning January 1. Without other charge, members receive the "Virginia Medical Monthly," official organ of the Society, and legal defense if sued for alleged civil malpractice.

With the annual meeting of the Medical Society so close at hand, each component society in the State should feel an urgent need to have a meeting this month, that they might appoint their delegates and alternates, and thus secure the representation to which they are entitled in the House of Delegates of the State Society.

This year, there is to be considered a revision in the Constitution and By-Laws of the Society. Now, if ever, each component society should be represented so as to have "its say." Get out your August MONTHLY and see if you are in accord with the Constitution and By-Laws proposed by the Committee which had this matter in charge. If not, your delegate may be empowered to express your views in the House of Delegates at the annual meeting in Norfolk.

Several county societies have reorganized this year. Don't be a laggard! Fall in line and let's have a society of which we may all be justly proud—

"It ain't the individual
Or the army as a whole,
But the everlasting teamwork
Of every bloomin' soul."

Womans Auxiliary

To the Medical Society of Virginia

At the request of the officers of the Auxiliary, this space has been set aside for communications from them regarding matters of interest, both to the profession and to the women members of their families.

All communications should be addressed to Mrs. E. F. Truitt, Secretary, Westover Avenue, Norfolk, Virginia.

"TO THE DOCTOR'S WIFE.

Into your keeping he has given his heart.
His professional life is a thing apart,
A life that is built on a vision divine,
To minister to all suffering mankind.
A service to which he is giving his life.
But remember his happiness is made by his wife.
So wake up to the vision of what you can do.
To the part in this service that is open to you."

—Addine C. Myers.

The doctors' wives have a wonderful opportunity to make their husbands happy, not only by courage, faith and love but with real service to the medical profession.

If each member of the Woman's Auxiliary would realize that with her rests largely the responsibility for success, and aim at the high standard Mr. Herbert Hoover set when he said: "Fifteen years of concerted organized scientific effort for health, especially of our children, will advance our nation, physically, mentally, morally and economically three generations."

Could there be a more worthy cause for the doctor's wife?

The object of the Woman's Auxiliary is to extend the aims of the medical profession through the wives of the doctors to the other woman's organizations which look to the advancement of health and education; to assist in entertaining at all medical meetings or conventions; to promote good fellowship among the doctors' wives and families; and to aid in such work as may be assigned from time to time by the medical societies.

The women members of the doctors' families are eligible for membership in the Auxiliaries, including wives, daughters, sisters and mothers.

If you have no Auxiliary in your section, meet together at once and organize.

Whether you are members or not, attend the State meeting and aid in the good work.

THE NORFOLK MEETING

Be sure to attend.

There is important business to be done and we promise you a good time.

Remember the date, October 12th to 15th.

SPECIAL REQUEST TO THE DOCTORS

Please hand this page to the women members of your family.

The Truth About Medciine

In addition to the articles enumerated in our letter of June 26th, the following have been accepted:

Lederle Antitoxin Laboratories
  Pituitary Extract—Lederle 20 Units
H. A. Metz Laboratories, Inc.
  Oscodal
    Oscodal Tablets 2 Gm.
H. K. Mulford Company
  Erysipelas Streptococcus Antitoxin—Mulford.

NEW AND NON-OFFICIAL REMEDIES

Tribasic Calcium Phosphate.—Tertiary Calcium Phosphate. Tribasic calcium phosphate contains approximately 85 per cent of $Ca_3(PO_4)_2$. It has been proposed for use as an antacid. It has the advantage over alkaline hydroxides, such as magnesium hydroxide, and alkali carbonates, such as sodium bicarbonate, in that, being insoluble, it neutralizes the excess of acid in the stomach but does not produce systemic alkalization. It has been claimed that tribasic calcium phosphate is somewhat constipating.

Calcium Phosphate Tribasic—P. W. R.—A brand of tribasic calcium phosphate—N. N. R. Powers-Weightman-Rosengarten Co., Philadelphia.

Thibasic Magnesium Phosphate.—Tertiary Magnesium Phosphate. Tribasic magnesium phosphate contains approximately 70 per cent $Mg_3(PO_4)_2$. Tribasic magnesium phosphate has been proposed for use as an antacid. It has the advantage over alkali hydroxides, such as magnesium hydroxide, and alkali carbonates, such as sodium bicarbonate, in that, being insoluble, it neutralizes the excess of acid in the stomach but does not produce systemic alkalization. It has been claimed that tribasic magnesium phosphate has a laxative action.

Magnesium Phosphate—P. W. R.—A brand of tribasic magnesium phosphate—N. N. R. Powers-Weightman-Rosengarten Co., Philadelphia.

Silvol Bougies 5 Per Cent.—Bougies weighing 0.81 Gm. and containing silvol (New and Nonofficial Remedies, 1926, p. 373) 5 per cent in a base composed of oil of theobroma, wool fat, white wax, acacia and glucose. Parke, Davis & Co., Detroit.

Silvol Ointment 5 Per Cent.—An ointment containing silvol (New and Nonofficial Remedies, 1926, p. 373), 5 per cent, in a base composed of petrolatum, wool fat, benzoinated lard and white wax. Parke, Davis & Co., Detroit.

Vaginal Suppositories Silvol 5 Per Cent.—Suppositories weighing 8.45 Gm. and containing silvol (New and Non-official Remedies, 1926, p. 373) 5 per cent, in a base composed of gelatin and glycerin. Parke, Davis & Co., Detroit. (Jour. A. M. A., July 10, 1926, p. 99).

Pituitary Liquid (Surgical)—Armour.—A slightly acid, aqueous solution containing the water-soluble principle or principles of the fresh posterior lobe of the pituitary body of cattle, free from preservative. It is standardized to have twice the strength of solution of pituitary, U. S. P. X. For a discussion of the action, uses and dosage, see New and Nonofficial Remedies, 1926, pp. 281-283. The product is supplied in 1 c.c. ampules. Armour and Co., Chicago.

Tetrabromophenolphthalein Sodium Salt—Eastman.—A brand of tetbrophthalein sodium—N. N. R. (formerly called tetrabromophthalein sodium, New and Non-official Remedies, 1926, p 162). Eastman Kodak Co., Rochester, N. Y.

Tetraiodophenolphthalein Sodium Salt—Eastman.—A brand of tetiothalein sodium—N. N. R. (formerly called tetraiodophthalein sodium, New and Non-official Remedies, 1926, p. 163). Eastman Kodak Co., Rochester, N. Y. (Jour. A. M. A., July 24, 1926, p. 245).

PROPAGANDA FOR REFORM

Shoe Dyes and Aniline Poisoning—Serious poisoning with the now widely used shoe dyes is by no means of uncommon occurrence. The toxic ingredient is the solvent of the pigment and appears to have been either nitrobenzene or aniline. The shoe dyes containing aniline are relatively inoffensive in odor, and for this reason are the more insidious, though less toxic than preparations containing nitrobenzene. The Chicago department of health will require that all shoe dyes bear a warning of their danger. (Jour. A. M. A., July 3, 1926, p. 34).

Filling the Physician's Prescription.—The latest report of the Connecticut Agricultural Experiment Station notes that, of about 300 samples of drugs examined, nearly thirty per cent were substandard or otherwise illegal. An interesting departure from the usual program of inspection is represented by the study of the strength and quality of medicaments obtained on physician's prescriptions. Three simple prescriptions were chosen. In the case of a prescription calling for a solution of potassium iodide of definite strength, twenty-seven of fifty-seven samples examined were within five per cent of the strength demanded; fifteen were within ten per cent of that strength, and fourteen varied from the required strength by more than ten per cent. Again, in the instance of a prescription calling for a solution of arsenous acid of the strength stated in the United States Pharmacopoeia, two of twenty-two samples examined were not the article demanded but another preparation of like arsenic content (Fowler's solution); nine varied from the required strength by more than ten per cent, and ten samples were within ten per cent of the strength demanded. The third prescription called for aromatic spirit of ammonia. Of forty-three samples examined, twenty-five were less than ninety per cent of the required ammoniacal strength. (Jour. A. M. A., July 3, 1926, p. 35).

The Germicidal Properties of Soap.—The assertion that solutions of soap may exert germicidal effects is credited to Robert Koch. His assertion has not been generally accepted. The customary view is that the value of soap rests on its cleansing powers, that is, by its property of removing germs mechanically. Lately, however, it has been shown that soaps are destructive to many varieties of microorganisms. Thorough washing of the hands with ordinary soap will destroy any adhering diphtheria bacilli, streptococci and pneumococci. There are microorganisms that seem to be unaffected by the soaps of some of the fatty acids. Foreign substances interfere markedly with the germicidal action of soap. (Jour. A. M. A., July 3, 1926, p. 37.)

Diathermy.—For the local application of medical diathermy, that is, the heating within physiologic limits of well defined parts of the body, it is permissible to raise the temperature to from 40 to 45 C. (104 to 113 F.) with the proviso that the individual tolerance be taken into consideration. Temperatures beyond 45 C., while not necessarily leading to complete coagulation of albumin, produce injury in the tissues. In general diathermy, usually called autocondensation, the safety limit is the raising of the temperature up to 2 degrees C. (3.6 degrees F.) above normal. Higher temperatures are apt to lead to severe disturbances. The desirable physiologic and therapeutic effect is brought about by moderate heating, causing an active hyperemia and the subsequent amelioration of the local metabolism. (Jour. A. M. A., July 3, 1926, p. 50).

Glyeuthymenol.—In the information furnished the Council on Pharmacy and Chemistry by the proprietors, Glyeuthymenol was stated to have the following composition: thymol, 30 grains; menthol, 20 grains; eucalyptol, 20 minims; synthetic oil of wintergreen, 30 minims; Indian gum powder, 3½ pounds; sodium benzoate, 10 ounces; glycerin, 2½ gallons; zinc sulphate, 6 ounces, and water, 7½ gallons. The Council reported that the advertising designates Glyeuthymenol as a "vaginal prophylactic" and stresses its use as a preventive of gonorrhea and as a contraceptive. The Council concluded that Glyeuthymenol is an unscientific mixture that is sold with claims which are misleading and unwarranted and that its use is inimical to the public health. (Jour. A. M. A., July 3, 1926, p. 51).

Methenamine.—Methenamine is the name now used in the new U. S. P. X, for the substance described in the old pharmacopeia as hexamethylenamine; it is a more convenient contraction of the scientific name hexamethylenetetramine. (Jour. A. M. A., July 3, 1926, p. 51).

The Action of Acetanilid.—The use of acetanilid, phenacetin, and other aniline derivatives may bring about symptoms similar to those of aniline poisoning. For acetanilid it has been shown that, like the mother substance, aniline, it also fails to produce methemoglobin despite the allegations of a positive sort in the medical literature. The action of acetanilid on the blood, heart, and circulation is essentially the same as that of aniline. Both form para-aminophenol in the body, and this may account in part for the cyanosis sometimes observed. Prolonged administration of sublethal doses of acetanilid also produces anemia and emaciation. (Jour. A. M. A., July 10, 1926, p. 103).

Animasa Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that Animasa, according to the Organotherapeutic Corporation, New York, is "a preparation obtained from intima and media of arteries of young and sound fat cattle, foetal extract, by-products of erythrocytes and serum." According to the Organotherapeutic Corporation, Animasa represents "the new method of treating hypertonus and arteriosclerosis." The Council found Animasa unacceptable for New and Nonofficial Remedies because it is a preparation of indefinite composition; because no evidence is submitted to show that its composition and uniformity are controlled; and because it is marketed with unwarranted therapeutic claims. (Jour. A. M. A., July 10, 1926, p. 116).

Sulcitacium Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that "Sulcitacium" is the name applied by the Davis-Johnson Co., Chicago, to capsules proposed for the treatment of hypertension. The advertising which the Davis-Johnson Co. sends out contains no definite statement of the composition of Sulcitacium; it is declared to be "a combination of the soluble mineral salts found in the normal blood plasma." The Council states that, as evidence for the effectiveness of treatment with Sulcitacium, case reports by a physician are offered; that there appears to be no support, either in physiology or in internal medicine, for the claim that administration of any quantity of inorganic salts normal for the blood will control essential hypertension; and that the records of the case do not allow of the conclusion that the use of the remedy causes the continued lowering of blood pressure. The Council declared Sulcitacium unacceptable for New and Non-official Remedies because its composition is not declared and because the therapeutic claims advanced for it are not supported by acceptable clinical evidence. (Jour. A. M. A., July 10, 1926, p. 116.)

L'Oreal Henne.—The A. M. A. Chemical Laboratory found the hair dye L'Oreal Henne (F. L. Lebeau, Inc., New York City), to consist of two packages: one containing a white powder, the other a yellow substance. The white powder responded to tests for sodium perborate. The yellow substance was apparently composed of iron and copper salts with pyrogallol and vegetable matter. (Jour. A. M. A., July 10, 1926, p. 118).

The Present Status of B. Acidophilus and B. Bulgaricus Therapy.—Recently the question was brought before the Council whether the successful implantation of *B. acidophilus* might be secured in other ways than through administration of *Bacillus acidophilus* milk, and the question was also raised whether *Bacillus bulgaricus* preparations were worthy of continued recognition. To obtain information on these and related questions, a questionnaire was sent by the chairman of the Council's Committee on Lactic Acid Ferment preparations to his associates on the committee and to others known to have studied the *Bacillus acidophilus* problem. As a result of the information which was obtained, the Council decided: (1) *Bacillus acidophilus* milk and broth cultures and concentrates of *B. acidophilus* will continue to be accepted, provided the preparations are marketed under nonproprietary descriptive names; provided the number of viable organisms contained in a stated quantity at the time of sale is declared on the label or in the advertising; provided the label bears an exp.ration date; and provided that for broth cultures and concentrates the advertising emphasize the need of carbohydrate (lactose or dextrin) administration. (2) Other preparations of *B. acidophilus*, such as tablets, emulsions and candies will not be accepted unless adequate evidence is presented to show that the implantation of *B. acidophilus* may be secured through their use. If such evidence becomes available, they will be accepted under the conditions outlined under (1). (3) *Bacillus bulgaricus* preparations will be retained, provided the claims for these are revised in accordance with modern opinion to show that they are considered to be of value only in the preparation of soured milk and that all claims for their intestinal implantation and for their value as external application be discontinued. (Jour. A. M. A., July 17, 1926, p. 172).

The Effects of Carminative Volatile Oils.—An investigation into the effects of the oils of peppermint, cinnamon, anise, caraway, wintergreen, fennel and orange indicates that the primary effect of these carminatives in concentration and doses comparable to those used clinically, is to relax the stomach and increase the tone and contraction of the small intestine and colon. Relief of discomfort by carminatives after a full meal can be understood easily in view of the relaxation produced by them; while in the intestine the effects of distention with gas or fluids would be relieved by increase in tone and contraction. (Jour. A. M. A., July 17, 1926, p. 176).

The La-Mar Reducing Soap Fraud.—H. J. Brown, of Cleveland, Ohio, has been quacking it for years. His latest piece of fakery was carried on under the tradename, "La-Mar Laboratories"—although there were no laboratories—and the product he sold was La-Mar Reducing Soap. Every physician knows, and the majority of intelligent laymen know, that there is no soap or other substance which, when rubbed on the surface of the body, will reduce weight. Nevertheless, newspaper and magazine publishers have accepted H. J. Brown's money and have aided him in swindling the public with the La-Mar Reducing Soap. Now, the post office authorities have denied the further use of the mails to this fake; but, while the mail order swindler lays himself open to prosecution, the newspaper or magazine which makes the swindle possible is exempt from punishment. (Jour. A. M. A., July 17, 1926, p. 189).

Bannerman's Intravenous Solution.—Physicians are receiving advertising from Bannerman's Intravenous Solution proposing its use in the treatment of varicose veins. This same remedy is recommended also for "Tuberculosis," "Pneumonia-Influenza," "Septicemia and Acute Infectious Diseases," "Anemia," "Rheumatism," "Syphilis," "Nephritis," "Chronic Endocarditis," "Chronic Abscess," "Arthritis Deformans," and "Puerperal Sepsis." The nostrum is marketed by the Wm. Bannerman Co., Chicago. The original Bannerman was a veterinarian. The preparation was refused recognition by the Council on Pharmacy and Chemistry in 1915, because vague, indefinite, and misleading statements were made in regard to its composition; because it was recommended for anemia, tuberculosis, and syphilis under

grossly exaggerated and unwarranted claims; and because the intravenous injection of complex and indefinite mixtures is unscientific and dangerous. It is not doubted that this mixture injected intravenously might cause "the veins for a certain distance from the point of injection" to become "more or less indurated" or "after from one to three or more injections . . . practically obliterated." Nor is there any doubt that "a fee of from $25 to $300 can be had for the treatment." There is, however, a very great certainty that the intravenous injection of such a shotgun mixture may result in far more serious consequences to the patient than the payment of a large fee and the induration or obliteration of a few veins. (Jour. A. M. A., July 17, 1926, p. 191).

Classification of Mercurials.—The A. M. A. Chemical Laboratory has attempted to work out a method of laboratory investigation and classification of mercurials. A method of evaluating the ionization of the mercury in mercury compounds used in medicine in the belief that this may have a direct bearing on their local irritant and antiseptic action was determined. This method was a modification of the Dreser yeast method which has been adopted in the new Pharmacopoeia as a means of testing the silver protein compounds contained in the book. According to the results yielded with this method, the commonly used mercury compounds fall into four distinct classes from the standpoint of ionization. Expressing this in terms of "Efficiency for equivalent of mercury" with mercuric chloride as unity, the first class comprises mercuric bromide and chloride, mercuric potassium iodide, mercuric succinimide, sublamine and metaphen, decreasing in this order from 1.7 units to 0.36 unit. In the second class come the freely ionizable compounds with correspondingly mild irritation; mercuric oxycyanide, cyanide and benzoate, and meroxyl. The third group includes mercurosal and the mercury-fluorescein dyes, mercurochrome, and flumerin. In the fourth class come afridol, which does not ionize enough, and mercuric salicylate, which does not dissolve sufficiently to affect the yeast sensibly. (Jour. A. M. A , July 24, 1926, p. 246).

National Goiter Treatment.—At Mason City, Iowa, a concern known as the "National Goiter Treatment Corporation" has been treating goiter on the mail order plan. The A. M. A. Chemical Laboratory examined two specimens of the "treatment." One contained the equivalent of 0.12 Gm. (1.8 grains) of potassium iodide per dose. The dangers of administering iodides in cases of hyperthyroidism are obvious enough to physicians, but would not be obvious to the general public even if those who took the National Goiter Treatment were in a position to know what they were getting. (Jour. A. M. A., July 24, 1926, p. 263).

Murarsenide Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that Murarsenide is the noninforming name applied by the Miller Biological Laboratories, Los Angeles, Cal., to a solution marketed in the form of ampules, claimed to contain in each 10 c.c. (one ampule): sodium dimethylarsenate (sodium cacodylate), 0.7 Gm.; mercuric oxycyanide, 0.004 Gm.; and sodium iodide, 0.5 Gm. The preparation is proposed for the treatment of syphilis and is to be administered intravenously. The advertising leads to the inference that "Murarsenide" presents an advance in the therapy of syphilis and that the arsenic compound contained in it is an advance over arsphenamine. The claims of originality are unwarranted. Preparations containing sodium cacodylate, a salt of mercury and an alkali iodide have been marketed for many years; further, sodium cacodylate has been shown to be inefficient in the treatment of syphilis; and there is no rational basis for the simultaneous administration of arsenic, mercury and iodide in the treatment of syphilis. The Council found Murarsenide inadmissible to New and Non-official Remedies because it is an unscientific pharmaceutical mixture marketed with misleading statements of composition, under a noninforming name and with unwarranted therapeutic claims. (Jour. A. M. A., July 31, 1926, p. 343).

Phenoseptine Powder and Phenoseptine Cones Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that Phenoseptine Powder, marketed by the Mertes Remedy Co., San Francisco, Cal., is stated to be composed of "Boracic Acid 75 per cent, Zinc Phenolsulphonate 18 per cent, Phenol, Menthol, Thymol and Eucalyptol 7 per cent." The Council further reports that in contradiction of the claims in the advertising, the Mertes Remedy Co. states that Phenoseptine Cones are made from the formula of Phenoseptine, only adjusted to meet that form of administration. The Council found Phenoseptine Powder and Phenoseptine Cones unacceptable for New and Non-official Remedies because their composition is indefinite and needlessly complex; because they are marketed under names that are not descriptive of their composition, and with therapeutic claims that are unwarranted; and because the recommendation on the trade packages invites their ill advised use by the public in diseases which require correct diagnosis and medical treatment. (Jour. A. M. A., July 31, 1926, p. 343).

Trypsogen.—Trypsogen, G. W. Carnrick Co., is a pancreatic preparation for oral use claimed to have a curative action in diabetes. In an article published under the auspices of the Council on Pharmacy and Chemistry it is stated that reliance on the oral administration of the pancreatic preparations thus far prepared has so little justification in the treatment of diabetes that such practice merits the most vigorous condemnation. It is pointed out that the claim that such preparations exert, in some mysterious manner, a rejuvenating or stimulating action on the diseased pancreas is based on uncontrolled clinical observation and chiefly on testimonials deserving no more consideration than do the similarly ill founded claims of the vendors of "patent medicines." (Jour. A. M. A., July 31, 1926, p. 345).

Book Announcements

Gould's Medical Dictionary. Containing all the words and phrases generally used in Medicine and the Allied Sciences, with their proper Pronunciation, Derivation, and Definition. By GEORGE M. GOULD, A. M., M. D., Author of "An Illustrated Dictionary of Medicine, Biology, and Allied Sciences," "Pocket Medical Dictionary," etc. Edited by R. J. E. Scott, B. C. L., M. D., Editor of "Witthaus' Text-book of Chemistry," Hughes' "Practice of Medicine," Gould's "Practitioner's Medical Dictionary," etc. BASED ON RECENT MEDICAL LITERATURE, with Many Tables. Philadelphia. P. Blakiston's Son & Co., 1012 Walnut Street. 8vo of 1,398 double column pages. Flexible Leather. Price $9.00.

As new words seem to be coined constantly, this Dictionary fills a great need. About 76,000 words are included and many illustrations and tables add materially to its value. It

is based upon current medical literature, and contains the terms in use in the related sciences, such as Chemistry, Pharmacy, Biology, etc. The constant aim of the publisher and editor is to make each edition more accurate, more comprehensive, and more helpful than preceding editions. The fact that nearly 700,000 volumes are being used throughout the world attests the great popularity of this book.

The Treatment of Fractures: With Notes Upon a Few Common Dislocations. By CHARLES LOCKE SCUDDER, M. D., F. A. C. S., Consulting Surgeon to the Massachusetts General Hospital; Formerly Assistant Professor of Surgery at the Harvard Medical School. Tenth Edition, Revised. Philadelphia and London. W. B. Saunders. 1926. 8vo of 1,240 pages with 2,027 illustrations. Polished buckram. Price, $12.00 net.

Scudder's has undergone a very thorough revision, if one may judge by the 64 per cent increase in the number of pages and 62 per cent addition in illustrations. Dr. Joseph C. Bloodgood has contributed a chapter on Pathological Fractures; Dr. F. W. Bancroft, of Columbia University, one on Bone Repair; and Dr. K. H. Thoma, of Harvard, one on Fractures of Maxilla and Mandible.

With the increased trauma incident to this rapid automotive age and the demands for increased efficiency in surgical achievements, the new edition of this acknowledged classic will be welcomed by the man in general practice, who has the first responsibility; by the roentgenologist, the umpire; and the general surgeon, whose utmost skill is often required to bring about satisfactory end results.

The ancient gibe—"A doctor's mistakes are six feet under ground"—was never said about a fracture.

Electrothermic Methods (Desiccation and Coagulation) **in the Treatment of Neoplastic Diseases.** Designed as a Practical Handbook of Surgical Electrotherapy for the Use of Practitioners and Students. By J. DOUGLAS MORGAN, M. D., formerly radiologist, Ross Pavilion, Royal Victoria Hospital, Montreal; Instructor in Radiology, University of Pennsylvania, Graduate School of Medicine, Philadelphia, Pa., etc. Philadelphia: F. A. Davis Company, Publishers. 1926. 8 vo. of 172 pages, illustrated with 36 line and half-tone engravings. Cloth. Price, $2.50 net.

The X-Ray in Embryology and Obstetrics. By W. A. NEWMAN DORLAND, M. D., F. A. C. S., Professor of Gynecology and Obstetrics and Head of the Department of Obstetrics in the Post-Graduate Medical School of Chicago; Author of "The American Illustrated Medical Dictionary," etc., and MAXIMILIAN JOHN HUBENY, M. D., F. A. C. R., F. A. C. P., Editor of **Radiology**; Director of the Department of Radiology of the Physicians and Surgeons Institution, etc. Bruce Publishing Company, Saint Paul, Minn., 1926. 8vo of 420 pages, profusely illustrated. Cloth. Price, $10.00.

Practical Materia Medica and Prescription Writing, With Illustrations. By OSCAR W. BETHEA, M. D., Ph.G., F. C. S., Professor of Clinical Therapeutics, Tulane School of Medicine; Professor of Therapeutics, Tulane Graduate School of Medicine; Formerly Professor of Chemistry and Professor of Pharmacology, Mississippi Medical College, etc. FOURTH REVISED EDITION. Philadelphia. F. A. Davis Company, Publishers. 1926. 8vo of 498 pages. Cloth. Price $4.50 net.

The Modern Treatment of Hemorrhoids. By JOSEPH FRANKLIN MONTAGUE, M. D., F. A. C. S., of the Rectal Clinic, University and Bellevue Hospital Medical College; Fellow of the American Proctologic Society, etc. Foreword by HARLOW BROOKS, M. D., F. A. C. P., Professor of Medicine, University and Bellevue Hospital Medical College; Fellow of American Gastro-Enterologic Society, etc. Philadelphia and London. J. B. Lippincott Company. 8vo of 296 pages with 116 illustrations. Cloth. Price $5.00.

Cannula Implants and Review of Implantation Technics in Esthetic Surgery. In Two Parts. By CHARLES CONRAD MILLER, M. D. The Oak Press, 358 West Madison Street, Chicago. 1926. Small 8vo of 178 pages, with 11 illustrations. Cloth, Price, $2.00.

Transactions of the College of Physicians of Philadelphia. Third Series. **Volume the Forty-Seventh.** Philadelphia. Printed for the College. 1925. Octavo of 844 pages. Cloth.

Cause and Cure of Juvenile Delinquency.

"Conflict with parental authority," and "thoughtless pranks" caused two-thirds of the juvenile delinquency cases brought against boys under 18 in seven Pennsylvania counties, while one-half of the girls' cases originated in complaints of parents that the girls were unmanageable or had run away, according to an analysis recently made by Dr. Neva R. Deardorff, Executive Secretary of the Children's Commission of Pennsylvania.

"The principal task now would seem to be not the stemming of a rising tide of juvenile delinquency by emergency measures," concludes Dr. Deardorff, "but the opening of channels for getting to parents, teachers, officials and all others who must deal with children, first the stores of readily available easily applied methods for the fostering of physical and mental health, and, second, of expert aid in especially difficult problems.

Virginia Medical Monthly

FOUNDED BY LANDON B. EDWARDS, M. D., APRIL, 1874.
OWNED BY THE MEDICAL SOCIETY OF VIRGINIA.
PUBLISHED BY THE PUBLISHING COMMITTEE.
A. G. BROWN, Jr., M. D., Chairman, Richmond, Va.
B. R. TUCKER, M. D., Richmond, Va.
P. W. HOWLE, M. D., Richmond, Va.
E. L. KENDIG, M. D. Victoria, Va.
A. L. GRAY, M. D., Richmond, Va.
ALEX. G. BROWN, Jr., M. D., Editor.
AGNES V. EDWARDS, Business Manager and Secretary-Treasurer.

All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $2.00 per annum in advance.
Single Copies 20c.

Vol. 53. SEPTEMBER, 1926 No. 6

Editorial

The Liver.

The next meeting of the Medical Society of Virginia will consider the liver as a special subject. From time to time this column has taken occasion to comment upon the liver in its various fields of medical interest. It is fortunate for the Society that the symposium on this selected subject is placed in the hands of men so well prepared to present succinctly the several phases to be considered. Besides the selected members of the Virginia Society, a distinguished member of the Mayo Clinic, Dr. Mann, will discuss the physiology of the liver. One may well attend upon Dr. Mann's discussion. He has done, with the collaboration of others at the Mayo Clinic, work upon the liver that has made his name known the world over. This research work by Mann has cleared a number of misty points and brought to light real facts that have heretofore been suspected but unproven. It is with the belief that repetition and reiteration in medical problems is beneficial that comment upon the liver is again brought forward here.

Sir Humphrey Rolleston and the diseases of the liver are almost synonymous terms: so broad and complete have been the clinical and literary accomplishments of this physician and author in this field. His text-book and monographs may well be considered as ranking in the forefront of present day efforts in the problems of the liver. Hence one may take his monograph in the recent Oxford Press as the source, based upon a bibliography therein published, for much that shall be found in this column now.

Functional Disorders of the Liver

Bile secretion is a leading and impressive function of the liver. Bile salts are manufactured by the liver cells. But the bile pigments, giving color to the bile, are eliminated by means, and as ingredients, of the bile, having origin in hemoglobin and endothelial cells "in other parts of the body." One should recognize the difference between the bile salts and the bile pigments. Bile salts are definitely charged with digestive properties in the intestines in connection with fat. Fat in the intestines is dependent upon bile salts during the first stages of digestion. Bile salts may act with stimulating or hormone properties upon the external secretion of pancreas (pancreatic juice). Bile pigments may possess properties of function in intestinal digestion. But upon the face of the returns from recent studies of the bile, one may venture to remark that the pigment (bile coloring matter) is an excretion throwing into the intestines effete material of blood tissues. May not the intestines be for the liver excretions what, in part, the bladder is for the kidney excretions?

The volume of bile flow may be as important as the volume of urine flow. The suppression of bile may be relatively as significant, although not so vitally, as urine suppression. The function of the liver cells in manufacturing bile for secretory action and excretory action takes on a new significance in the light of present-day findings and probabilities. The liver unfortunately gives few outward signs of suppression before jaundice appears. When hepatogenous or hematogenous jaundice appears, one has no longer to question that liver cells or bile flow is at fault.

The glycogen function of the liver cells is an outstanding one. The formation and storage and hydrolysis of glycogen by the liver occupies a strategic point in carbohydrate metabolism. The liver, receiving the first quota of carbohydrate foodstuff, partially converted from the first stage of digestion in the intestines, always stands as a storage plant for the carbohydrate metabolites, discharging into the blood amounts required to maintain normal blood sugar levels.

Jaundice

Jaundice may be likened to oedema. It is a symptom of bile obstruction, or suppression; like urinary oedema, it is the result of suppression of urinary flow, or urinary retention. Like albuminuria, also, it may show in the urine as

a symptom. If urine is retained too much by the body, the urine discharged shows albumin and casts; if bile is retained by the body, the urine shows bile pigments in urine and bile color taints in the skin.

Jaundice may be divided into obstructive, hemolytic and infective, toxic, hemohepatogenous, jaundice.

Rolleston, in common with others, subdivides obstructive jaundice into four pathologic types. First, obstructive may occur from within the lumen of bile ducts: (a) gall-stones; (b) inspissated bile or mucus; (c) parasites; (d) carcinoma. Second, changes in the walls of the ducts: (a) swelling from inflammatory pathology (cholangitis); (b) stricture; acquired or congenital; (c) primary tumors (papillomas). Third, pressure on ducts from without by tumors, enlarged glands or inflammatory adhesions: (a) intrahepatic carcinoma, gumma, etc.: (b) enlarged glands in the portal fissure, resulting from carcinoma in liver, gall-bladder, stomach, or from tuberculosis, syphilis, etc.: (c) pancreatic lesions: (1) chronic pancreatitis and carcinoma of head of pancreas: (2) calculus in duct of Wirsung. Other rare pathologic conditions. Fourth, torsion or kinking of ducts, resulting from ptosis, etc.

Hemolytic jaundice results probably from fragility of red blood corpuscles, undergoing hemolysis. The association of splenic enlargement with this is common, but the causes of fragility of red cells and splenic enlargement is not determined. The endothelial cells in the spleen "probably play a part both in hemolysis and in the formation of bile from the liberated hemoglobin." This kind of jaundice is hematogenous, resulting from the formation of bilirubin in the circulation. The clinical picture of these patients resembles that of pernicious anemia, but the blood examination, showing leukocytosis with myelocytes and eosinophilia, differentiates it from pernicious anemia.

Toxic and infective jaundice results from some general infection or intoxication. It is seen in cases of septicemia, pneumonia, or chloroform and phosphorus poisoning. The jaundice here is not profound. The evidence of general sickness is greater than the degree of jaundice.

Infective jaundice has been noted frequently in the literature since the war, and much remains unknown concerning its bacteriology. Acute yellow atrophy of the liver occurring from some poison like chloroform or arsphenamin is characterized by a jaundice. The necrosis of liver cells produces a flabby, wrinkled organ without function. Phosphorus poisoning brings about a jaundice of the same type when a sufficient area is involved. Fatty degeneration of liver cells and obstruction of bile tracts produce jaundice, due to loss of bile-forming power of the liver.

Gall-Stone Formation

The fundamental factor in gall-stone formation appears to be the infection in hypercholesterinemic persons who also have a high cholesterin content in bile. Cholecystitis, high cholesterin-charged bile, with stagnation in gall-bladder or gall duct, combine to produce the factors essential in the making of biliary calculus. One may ask then, what are the conditions of life that produce high cholesterin bile? (1) Advanced age; (2) women more than men; (3) white race; (4) diet rich in fat and carbohydrates; (5) overweight; (6) infection.

Infection may come to the gall-bladder by the blood or lymph from such diseases as pneumonia, influenza, tonsillitis, pyelitis, oral infections (acute and chronic) septicaemia, erysipelas. Infections may reach the gall-bladder from the alimentary tract in such infections as appendicitis, typhoid fever, enteritis, amebic dysentery, colitis (acute and chronic).

Cirrhosis

Cirrhosis of the liver may be considered a state of advanced or late liver pathology, involving in terminal degree much of its functional capacity, vascular structures and bile draining system. Such a chronic change of this organ results only after prolonged influence of some strongly harmful group of causes upon its tissues. Cirrhosis of the liver then occurs in various forms and has been classified, on account of its clinical features, in many ways. But when all is said, one may remark that cirrhosis strikes a deadly blow at the function of liver cells—as to carbohydrate storage, as to urea formation, as to fat metabolism, and as to bile secretion and excretion. Cirrhosis here looms as a process of an ominous sort in the pathologic evolution of the organ.

Overfeeding, alcoholism, infection may be given as the most frequent of its general causes. These factors assume many combinations and variations, but usually in one way or another operate, in combination or singly, to bring about cirrhotic changes in the liver.

Rolleston gives us the following classification which may serve well as a synopsis of cirrhosis:

(a) Portal, multilobular or common cirrhosis.

Special forms: Pigment cirrhosis, cirrhosis in children.

(b) Biliary cirrhosis.

(1) Hypertrophic (Hanot's).

(2) Obstructive.

News Notes

Come One, Come All, to Norfolk, Next Month!

For the Local Committee says Norfolk expects to make this meeting of the *Medical Society of Virginia* one of the most memorable since its organization. The committee has taken hold with zest, and the meeting is bound to be a great success.

Dates selected for the meeting, October 12, 13, 14 and 15, are in the early Fall, which is the ideal season of the year in Tidewater Virginia, with warm spring-like days and cool pleasant nights. The seashore at this season is beautiful and idyllic by day, and fittingly so for lovers only at night (so a member of the local committee states).

There is always something going on in Norfolk—amusements galore. There are two large new theatres for continuous performances, besides one for high class performances, and numerous picture houses.

Norfolk with its metropolitan air appeals to all. Sea food here is plentiful from the bountiful waters of the Chesapeake.

Scientifically, the Norfolk County Medical Society welcomes you, with its library of three thousand volumes, and full time librarian who will be at your service. The library is housed on the top floor of the Medical Arts Building.

Every doctor in the Society should come to Norfolk and be prepared to stay for the full time of the meeting and continue the vacation over the week end if possible. The Norfolk doctors wish a large attendance and welcome all.

It is announced that there will be an oyster roast at Cape Henry for the doctors and the lady members of their families, as well as other entertainments.

So much has been said about the pleasures to be expected, from information given by the local committee, that we wish to state that the fifty-seventh annual meeting of the Society will in no way be a second-class one as far as its scientific program is concerned, either. We have a large number of papers, which includes a symposium on "The Liver." Arrangements have been made to have all of these papers discussed.

We are exceedingly fortunate in the guests selected by our president, Dr. W. L. Harris, of Norfolk. They are Dr. Walter A. Wells, of Washington, D. C., who will speak on the first evening, Dr. Frank C. Mann, of the Mayo Clinic, Rochester, Minn., who will have a paper in the subject for general discussion, and Dr. Roger H. Dennett, of New York City, who will speak on a pediatric subject. Dr. Olin West, secretary of the American Medical Association, has also accepted an invitation to be with us, and will speak at one of the general meetings.

The Monticello Hotel will be headquarters for the meeting and both meetings and exhibits, as well as the meetings of the Woman's Auxiliary, will all be held there. It is always wise to make hotel reservations in advance. If you are not familiar with names of the local hotels, Dr. Southgate Leigh, chairman of the Hotel Committee, will be glad to offer you such service as you wish.

The Woman's Auxiliary is becoming an active factor in our State meetings, and doctors are urged to bring their wives and daughters. The Norfolk branch of the Woman's Auxiliary is an especially live one and, as Mrs. Southgate Leigh, of Norfolk, is president of the Woman's Auxiliary of the Medical Society of Virginia, every effort will be made to make this an unusually interesting and pleasant meeting.

Following is a list of the chairmen of the Committee on Arrangements:

General Chairman—Dr. Israel Brown.

Reception and Automobiles—Dr. J. Warren White.

Badges, Printing and Publicity—Dr. E. C. S. Taliaferro.

Golf—Dr. B .R. Kennon.

Entertainment—Dr. W. E. Driver.

Scientific Exhibits—Dr. Wm. B. Newcomb.

Commercial Exhibits, Hotels and Meeting Halls—Dr. Southgate Leigh.

Ladies—Mrs. Southgate Leigh.

The Chairman of the Committee on Scientific Exhibits asks us to state that his Committee is very anxious to stimulate an increased interest in these exhibits, and would especially like to increase the number of exhibits. They feel that the medical schools in the State, as well as many hospitals, clinics, and individual physicians must have much that would be most interesting to show.

This Committee will be very pleased to cooperate in arranging whatever space or other material may be required to make a favorable display. Any one interested in having a scientific exhibit, should address Dr. Wm. B. Newcomb, chairman, 220 West Freemason Street, Norfolk.

Golfers should advise Dr. B. R. Kennon, Taylor Building, Norfolk, promptly, if they wish to enter the golf tournament, which is scheduled for Tuesday, the 12th of October. That golf cup, donated three years ago by the Roanoke Academy of Medicine, to be held permanently by the winner of two consecutive tournaments, is still at stake.

So much has been and is being planned for this meeting, that every member of the State Society should attend.

Norfolk's Attractions as a Convention City.

Norfolk, where the Medical Society of Virginia will hold its annual convention on October 12, 13, 14 and 15, has much to offer the visitor in historical interest and opportunities for recreation.

In the military and naval history of the United States the area around Norfolk has always played an important role. The Norfolk Navy Yard, the coast artillery posts at Fortress Monroe and Fort Eustis, the Hampton Roads Naval Operating Base and the Aviation centers at Langley Field—all are worth visiting. Thousands upon thousands of men either trained at Norfolk during the World War or passed through the port on their way to France.

The twenty-five miles of white sand beach extending from Willoughby through Ocean View, Lynnhaven and Ocean Park on the Chesapeake Bay to Cape Henry and Virginia Beach on the Atlantic Ocean constitute America's ideal all year playground. The location of this fine stretch of beach is full of fascinating places for recreation—swimming, surf bathing, hunting, fishing, hiking, horseback riding, yachting, etc.

As for golf, there is no finer course anywhere than the famous Princess Anne, cut through a forest of stately pines on the edge of the ocean at Virginia Beach. And in the Norfolk-Portsmouth section there are many other beautiful and sporty courses.

For those who like fishing Norfolk offers rare sport. In Chesapeake Bay, in the ocean, and in inland waters there is an abundance of fish of many varieties. Confirmed sea food epicures delight in the justly famous Lynnhaven oysters. There is no better duck shooting anywhere on the Atlantic coast than in the Back Bay section south of Norfolk. The duck season attracts thousands of sportsmen from all over the country.

Late Vacationists.

Dr. Reid White, Lexington, Va., spent part of August visiting a son in Asheville, N. C.

Dr. and Mrs. G. A. Ezekiel recently returned to their home in Richmond, after a visit to Mrs. Ezekiel's mother in Baltimore.

Dr. Alexander McLeod and family, of Glen Allen, Va., motored to Canada, about the middle of August and spent several weeks visiting there.

Dr. and Mrs. Paul W. Howle, son and daughter are again at their home in Richmond after a tour of Southern Europe, England and France.

Dr. and Mrs. M. H. Watson and son, of Chatham, Va., have been on a visit to relatives at Afton and Charlottesville, Va.

Dr. Mary Baughman and her mother have returned to their home in Richmond, after a motor trip. While away they visited relatives in Oakland, California.

Dr. and Mrs. W. P. Jackson returned to their home in Roanoke, the latter part of August, after a visit in Richmond.

Dr. J. W. Hannabass and family, of Richmond, are home again after a visit to Roanoke, Va.

Dr. H. E. Jordan, University, Va., has been spending some time at Ocean Grove, N. J.

Dr. and Mrs. Thomas F. Gill and sons are again at their home in Richmond, after a vacation spent at Colonial Beach, and in the mountains of Virginia.

Dr. H. B. Mulholland, University, Va., spent his vacation at Camp Allegheny, in Greenbrier County, West Virginia.

Dr. Charles C. Haskell has returned to his home in Richmond, after a visit to Rockbridge Baths, Va.

Dr. and Mrs. J. N. Elder, Hopewell, left the latter part of August for Cambria, Va., to visit Mrs. Elder's mother.

Dr. and Mrs. Carrington Williams and sons, Richmond, left by motor, the latter part of August, for Cape May, N. J., where they joined friends for a vacation.

Dr. A. M. Showalter, Cambria, was a recent visitor in Lynchburg, Va., having been called there professionally.

Dr. J. C. Bodow returned to his home in Hopewell, Va., the latter part of August, after a fishing trip to Gloucester Point, Va.

Dr. Elbert Talbot has returned to Richmond, after a visit to Rochester, Minn., where he attended the Mayo Clinics for a time.

Dr. and Mrs. H. M. Snead and children, of South Hill, Va., spent their vacation with relatives at Fork Union, Va.

Dr. R. F. Thornhill, Pulaski, spent the latter part of August with a party of friends on a motor trip to Canada.

Dr. Wm. R. Weisiger, Richmond, is home again, after spending a couple of weeks at the rifle range at Virginia Beach.

Dr. and Mrs. D. H. Mason, Ridgeway, Va., spent their vacation visiting relatives in Sussex County, Va.

Dr. and Mrs. A. P. Traynham and son, of Richmond, are home again after a visit to Dr. and Mrs. B. L. Traynham at Old Sweet Springs.

Dr. L. A. Robertson, Danville, Va., has been on a vacation in California.

Dr. and Mrs. G. H. Musgrave returned to their home in Richmond, last month, after a visit to friends in Southampton County, Va.

Dr. John Shackelford, Martinsville, Va., spent a pleasant vacation on a fishing trip in Maine.

Dr. W. T. Oppenhimer, Richmond, recently spent some time in Washington, D. C.

Dr. Charles E. Dyer, Pulaski, Va., was a recent visitor in Alexandria, Va., where he was one of the representatives from the Pulaski County Post to the grand encampment of the American Legion.

Dr. Claude Moore, Roanoke, Va., has been vacationing at Crockett Springs, Va.

Dr. N. W. File, Lynchburg, Va., recently visited his parents in Buckingham County, Va.

Dr. and Mrs. M. H. Harris and daughter, West Point, Va., spent some time in August visiting Dr. Harris' father in Louisa, Va.

Dr. W. W. Wilkinson and family, of La Crosse, Va., took a motor trip through the Valley of Virginia, last month.

Dr. A. G. Brown, Jr., and family have just returned to their home in Richmond, after a vacation at Woodberry Forest, Va.

Dr. and Mrs. A. P. Bohannon, Virgilina, Va., recently visited relatives at Saluda, Va.

Dr. W. L. Harris, Norfolk, left the latter part of August, by boat, for Boston, Mass., and motored from there to Maine. Following a two weeks' fishing trip, he will motor back, arriving home about the end of September.

Dr. Guy Hinsdale returned to his home at Hot Springs, Va., early this month, after spending the summer at Kennebunkport, Maine.

Dr. Henry A. Hornthal, Potomac, Va., and Washington, D. C., returned the last of August from a two weeks' stay at Greenbrier Hotel, White Sulphur Springs, W. Va.

Dr. R. Lester Hudgins and family have returned to their home in Farmville, Va., after spending August at Virginia Beach.

Dr. E. E. Feild, Norfolk, Va., has been spending the summer at Crockett Springs, Va.

Dr. and Mrs. A. L. Wellford, Richmond, spent a vacation recently as guests of their son in Pulaski, Va.

Dr. and Mrs. C. T. Carter, Danville, Va., are home again after spending several weeks in Nova Scotia.

Dr. and Mrs. J. W. C. Jones, Newport News, Va., spent most of August at Warm Springs, Va.

Dr. W. R. Whitman, Roanoke, visited his mother in Pulaski, Va., last month.

Dr. F. M. Hisey returned to his home in Edinburg, Va., about the middle of August, after being for a time at Memorial Hospital, Winchester, Va.

Dr. and Mrs. J. F. Geisinger, and son, of Richmond, have returned home after a vacation in the mountains of western North Carolina.

Dr. and Mrs. Cullen S. Pitt have returned to their home in Richmond, after a motor trip through New York and Pennsylvania, where they visited many places of interest.

Dr. T. W. Edmunds, Danville, Va., with a party of friends, visited White Sulphur Springs, W. Va., last month.

Dr. Julian M. Robinson was also a member of the Danville party which visited White Sulphur Springs.

Dr. Richard Mason, The Plains, Va., was a recent visitor in Waynsboro, Va.

Dr. J. F. Hubbard, Waynesboro, Va., spent his vacation in the Eastern part of Virginia.

Dr. and Mrs. E. Howe Miller, Danville, Va., spent some time in August at Blowing Rock, N. C.

Dr. and Mrs. Allen T. Hawthorne, Winchester, Va., with a party of friends, returned home the last of August from a motor trip to the New England States.

Dr. A. S. Lilly and family, Richmond, after a motor trip to Athens, W. Va., spent some time at their cottage on the Rappahannock River.

Dr. and Mrs. G. B. Barrow, Clarksville, Va., have been recent visitors at Patrick Springs, Va.

Dr. Susan W. Field, of the State Teacher's College, Farmville, Va., has been visiting at her former home in Lincoln, Nebr.

Dr. H. S. Belt and sons, of South Boston, Va., have been visiting relatives in New York City.

Dr. and Mrs. Giles Cook and sons, of Front Royal, Va., were recent vistors at the country home in Loudoun County, Va., of Dr. and Mrs. Wm. J. Mallory, of Washington, D. C.

Dr. Cornelia Segar, Burkeville, Va., is much improved after undergoing an operation at Johnston-Willis Hospital, Richmond.

Dr. L. H. Hoover, Clarksville, Va., was a recent visitor at Virginia Beach.

Dr. V. B. Hirst, of New York City, has been visiting his former home at Purcellville, Va. Dr. Hirst is an alumnus of the Medical School of the University of Virginia, in the class of '18.

Dr. R. C. Bryan and family, of Richmond, have been visiting in Maryland.

Dr. and Mrs. A. D. Parson and little daughter have returned to their home in Raven, Va., after a visit to relatives in South Boston, Stony Creek, Natural Bridge and Max Meadows, Va.

Dr. Robt. P. Kelly has returned to his home in Lynchburg, Va., after a visit of about ten days to the Chicago Lying-In Hospital.

New City Medical Inspector for Richmond.

Dr. Charles L. Outland, who has been engaged in health work in Greenville, N. C., has been appointed chief medical inspector of the Bureau of Health of Richmond, Va., and assistant to Dr. W. Brownley Foster, director of public welfare, to succeed Dr. B. B. Bagby, resigned.

Dr. Outland is an alumnus of the Medical College of Virginia, in the class of '17, and later served an internship at Johnston-Willis Hospital, this city. He also saw service in the World War. Dr. Outland has taken postgraduate work in public health at both Johns Hopkins and Columbia and comes highly recommended for the position. He enters upon his new duties the first of October.

Changes at St. Christopher's, Norfolk.

St. Christopher's Hospital, Norfolk, Va., is to be discontinued as a hospital and operated as a modernly equipped clinic for the study of general medical and surgical cases. The operating suite and the rooms on one floor will be retained as at present for such cases as do not require prolonged hospitalization. Office cases, cases for study and minor surgical cases will be handled here. Major cases, medical and surgical, will be admitted to one or other of the general hospitals in the city.

Dr. A. B. Hodges who has been associated with Drs. Lomax Gwathmey and Wm. B. Newcomb for the past two years, has purchased Dr. Ruffin's interest in the institution and the clinic will be operated jointly by these three physicians.

Farewell Party for Dr. B. B. Bagby.

Just before Dr. B. B. Bagby's departure for his new field in Athens, Ga., the nursing division of the Richmond Health Bureau gave him a surprise party at his home in Richmond. On their behalf, Dr. W. Brownley Foster, director of Public Welfare, of Richmond, presented Dr. Bagby with a fully equipped traveling bag. Dr. Bagby entered upon his duties as health officer of the city of Athens and Clarke County, Ga., on September 1st.

Doctors Appointed as Delegates.

Governor Byrd appointed Drs. Lawrence T. Price, of Richmond, and William F. Drewry, of Petersburg, among the Virginia delegates to the Atlantic Deeper Waterways' Association, to be held in Richmond, Va., September 14-17.

Continued Decline in Virginia Birth Rate.

The State Bureau of Vital Statistics announces that during the first six months of 1926 there is another decrease in birth rates in Virginia, as compared with the same period during 1925. It seems hardly probable that the decline is due to less complete registration, as the Bureau has been making more strenuous efforts than ever to secure the prompt and accurate registration of births. The "Mother's Certificate," mailed out by the Bureau within about four months after birth of a child, will

now be required for entrance into the public schools, so physicians and midwives are again reminded to turn in certificates of birth promptly.

Dr. A. L. Jones,

For the past few years of Galax, Va., has moved to Lundale, West Virginia, where he is connected with the Lundale Hospital.

Dr. R. L. Shuler,

Formerly of Konnarock, Va., moved to Chilhowie, Va., the first of September.

Dr. H. S. Daniel, Jr.,

Of Louisa, Va., has been elected mayor of that place, to fill the unexpired term of the former mayor who died recently.

Married.

Dr. Wesley Williams, Norfolk, Va., and Miss Stella M. Duke, Washington, D. C., August 5.

Dr. Miletus Brown Jarman, Richmond, Va., and Miss Jeannette Talbott Morris, Gainesville, Fla., June 28. Dr. Jarman, upon graduating from Medical College of Virginia, in 1925, accepted an internship at Memorial Hospital, Richmond.

Dr. Theodore M. Trousdale, Richlands, Va., and Miss Mabelle Lee Mason, Norfolk, July 3.

Dr. Taswell Paul Haney, Jr., Burnsville, Miss., but at present an intern at University Hospital, University, Va., and Miss Dorothy Gentry, of Crozet, Va., July 15.

Dr. Roy L. Noblin,

An alumnus of the Medical College of Virginia, after a year at Stovall, N. C., has moved to Oxford, N. C.

The American Public Health Association

Is to hold its annual meeting in Buffalo, N. Y., October 11-14. One hundred and forty speakers are listed on the program. Programs and information about this meeting may be obtained from the executive secretary, Mr. Homer N. Calver, 370 Seventh Avenue, New York City.

Dr. R. Stuart Van Metre,

An alumnus of the Medical College of Virginia, who has recently been connected with the Logan County Health Department, with headquarters at Logan, W. Va., has located in Huntington, W. Va., with offices in the Library Building.

High Maternity Mortality Rates in the United States.

The Children's Bureau of the U. S. Department of Labor in a report on the prevention of maternal mortality and morbidity throughout the United States, shows that maternal mortality rates in the United States are today among the highest in the civilized world. Puerperal septicemia is the most important single cause of maternal deaths in this country, and this is largely preventable.

Cities show a higher maternal mortality rate than rural districts in the United States, but to some extent this difference is to be accounted for by the fact that many of the more difficult or complicated cases are brought from rural regions to the cities for hospital facilities.

The Bureau has outlined a preventive program, with a view to reducing the high maternity mortality and morbidity rate.

Surgeons in Sons of Confederate Veterans.

Dr. R. L. Mason, Roanoke, Va., and Dr. Charles B. Fox, Monterey, Va., have been appointed surgeon and assistant surgeon, respectively, in the Virginia Division, Sons of Confederate Veterans.

Return from Encampment.

Drs. A. I. Dodson and E. T. Trice, Richmond, and Dr. Ira Hurt, Roanoke, Va., returned to their homes the last of August, after attending the annual encampment of the 246th Coast Artillery, Virginia National Guard.

Dr. Robley R. Goad,

Of the class of '25, Medical College of Virginia, has decided to enter private practice and has located for this purpose at Big Stone Gap, Va.

"Wild Youth" is Not so Wild.

Urging the need of national statistics on juvenile delinquency, the Children's Bureau made public recently a statement summarizing what official figures there are on this subject. These show, contrary to widely published statements, a downward trend in juvenile delinquency rates in large cities. Census reports covering the whole country indicate also,

the Bureau found, "no significant increase" in the number of children committed to institutions for the more serious offenses—homicide, robbery, burglary.

Of the fourteen cities—New York, Boston, Buffalo, Chicago, New Orleans, Providence, Richmond, St. Louis, Washington, D. C., Rochester, Detroit, Minneapolis, Philadelphia and Seattle, for which the Children's Bureau was able to secure juvenile court statistics, decreased delinquency rates were found in the first named nine cities.

The National Tuberculosis Association

Will be held in Washington, D. C., October 4-7, immediately following the meeting of the International Union Against Tuberculosis, which is scheduled for September 30-October 2. Addresses will be given by a number of distinguished men and women. Special arrangements will be made for interpreting foreign language papers.

The sessions of the National Tuberculosis Association are open to all persons interested: those of the International Union Against Tuberculosis are open only to members.

Further information about either of these meetings may be obtained from the National Tuberculosis Association, 370 Seventh Avenue, New York.

The Wise County Medical Society

Has invited all of the regular doctors in the counties included in the Clinch River Valley district to meet with them on September 22nd, at Norton. This special meeting has been arranged to discuss the feasibility of organizing a society to include all these counties. In addition to the discussions by members, Drs. F. S. Johns and H. U. Stephenson, of Richmond, have been invited to present papers. A subscription dinner will be held in the evening at the country club. Dr. W. B. Barham, Big Stone Gap, is president of the Society, and Dr. C. B. Bowyer, Stonega, secretary.

Virginia Doctors—Take Notice!

In the *Correspondence Department* of this issue appears a letter from Dr. W. A. Plecker, State Registrar of Vital Statistics, which we trust every Virginia doctor may read, on account of its urgent appeal for a compliance with our State law. Apart from this, no true physician wishes to be guilty of a "sin of omission" which may hamper an individual for life. It costs you nothing, but on it may depend much. Won't you read the letter on page 402 now?

Largest U. S. Veterans' Hospital.

The Government last month awarded contract for the largest of its hospitals yet erected. It will contain one thousand beds for neuro-psychiatric patients and about thirty-five buildings will comprise the hospital group. The site selected covers about 550 acres about one and one-half miles south of Northport, L. I. Work will begin at once.

Dr. W. Randolph Graham,

An alumnus of the Medical College of Virginia, class of '25, and later resident physician at Johnston Willis Hospital, Richmond, has gone to Boston, Mass. While there, he will be research fellow in medicine at the Peter Bent Brigham Hospital and assistant in medicine at the Harvard Medical School.

Dr. Sun Saves Indian Babies From Rickets.

Although analysis shows Chippewa Indian babies have a higher percentage of physical defects than white children, and that variation between them in the incidence of rickets among the breast-fed babies is slight, in the case of artificially-fed children rickets occurs with twice the frequency among whites as among Indians. This, it is suggested by the Minnesota State Department of Health, is due to the preventive effect of the greater exposure of Indian babies to direct sunlight. Minnesota's Child Hygiene Division has held during the past two years a series of infant and preschool clinics for children of the Minnesota Chippewa Indians, and two Chippewa Indian nurses have been employed to do maternal and infant hygiene nursing.

Dr. W. C. Moomaw,

Petersburg, Va., was recently called to Roanoke, Va., by the death of his brother, Clarence, who died at the Johns Hopkins Hospital, Baltimore.

The Augusta County Medical Association,

At its regular meeting on August 4th, elected the following officers for the ensuing year: President, Dr. H. G. Middlekauff, Weyers Cave; vice-presidents, Drs. George F. Hollar, Waynesboro, C. P. Obenschain, New Hope, and W. M. Phelps, Staunton; secretary, Dr. Charles W. Putney, Staunton; treasurer, Dr. T. M.

Parkins, Staunton. Dr. W. M. Phelps, Staunton, was elected delegate, and Dr. R. S. Griffith, Basic, alternate to represent the Association at the Norfolk meeting of the State Society.

The Association and the King's Daughters' Hospital have combined their libraries and enlarged them recently.

Nurses' Home for Loudoun County Hospital.

Contract has been awarded for a new nurses' home for the Loudoun County Hospital at Leesburg, Va. This will contain a good-sized rest room, ten bed rooms, besides a bath on each floor. The specifications call for a tile stuccoed building which will have many modern features.

Dr. M. A. Johnson,

Roanoke, Va., was elected district governor of the fourth district of the American Business Clubs, at its second annual convention in Roanoke in August.

Dr. Tom A. Williams,

Who left Washington last winter to practice his specialties, neurology and psychiatry, in Florida, is recovering from a fracture of the humerus and has now resumed work at his office in the Exchange Building, Miami, Fla.

Dr. J. E. Richardson,

Leatherwood, Va., is one of the officers of the Henry County, Va., Fair, which opens on September 21.

Dr. Frank Helvestine, Jr.,

For a short time of Danville, Va., has located in Roanoke, Va., with offices at 612-613 MacBain Building. He will limit his practice to surgery, gynecology and obstetrics.

The Arlington County Medical Society,

At its regular meeting held August 4th, appointed Dr. J. H. Walton, Cherrydale, delegate and Dr. H. A. Hornthal, of Potomac, alternate, in the House of Delegates of the Medical Society of Virginia, at its Norfolk meeting.

Dr. J. H. Walton was also appointed to confer with the American Legion in regard to building a hospital in the County. It is stated that a hospital is badly needed and the Society is hopeful that before long plans will be adopted to this end.

Dr. J. Y. Tenpleton,

For some time at Portsmouth, Route 3, Va., has moved to Mooresville, N. C.

Dr. John S. Lawrence,

Of the class of '21, University of Virginia School of Medicine, after special work at the Massachusetts General Hospital, Boston, Mass., has gone to Nashville, Tenn., as resident in medicine at the Vanderbilt Hospital, under Dr. G. Canby Robinson.

Dr. Jacob S. Rosenthal,

Of Norfolk, Va., is at the New York Post-Graduate Medical School and Hospital, New York City, where he is taking a course in cystoscopy, operative urology and regional anesthesia of the genito-urinary tract.

Dr. Andrews in Baltimore.

In July, we stated that Dr. Mallory S. Andrews, for the past year an intern at Norfolk Protestant Hospital, had located for practice in Norfolk. We were incorrectly advised about this as Dr. Andrews states that he accepted an appointment, effective September 1, as an intern in the Johns Hopkins Hospital, Baltimore, Md.

Dr. E. R. Ferguson,

Formerly of Harrisonburg, Va., having finished a residency in eye, ear, and nose and throat work at the New York Polyclinic Medical School and Hospital, New York City, has located in Cleveland, Tenn., to practice his specialty. He is a member of the staff of the Speck Hospital, of that city.

Wanted—

At once, a well trained, active, young physician for a strictly rural practice in Northern Virginia, near Washington, D. C. Could collect $5,000 first year and eventually $10,000 a year. Country and people excellent. Schools very good and churches a plenty. Roads not so good but car can be used year around. Nothing to sell and no capital necessary. In answering, give full description of self and training, mentioning religious, club and fraternal connections in first letter. Address "H," care this journal. (Adv.)

For Sale—

A brand new Douglas-Demoresque-Sluder. Has never been used. Cost $31.00; will sell for $25.00 cash. Address No. 502, care this journal. (Adv.)

Obituary

Dr. William Clayton Orr,

A prominent Loudoun County physician, died at his home in Leesburg, Va., August 29th, after an illness of ten days. He was born in Petersburg, Va., forty-eight years ago and studied medicine at the University College of Medicine, Richmond, from which he took his

degree in 1900. Following this he served for one year as an interne at the Central State Hospital, Petersburg and then located in Loudoun County. Since locating in Leesburg, twenty-four years ago, Dr. Orr has taken an active part in everything pertaining to the development of that section. He was one of the organizers of the Loudoun County Hospital and had been for a number of years secretary of the Loudoun County Medical Society. He was also a member of the Medical Society of Virginia and of the Medical Society of the District of Columbia. Northern Virginia and Maryland. He was a Shriner and his funeral was held with Masonic honors. His wife and seven children survive him.

Dr. Wirt Peebles Marks,

Well known Surry County physician, died at his home in Claremont, Va., September 2nd, in the fifty-sixth year of his age. His wife and five children survive him. Dr. Marks graduated in medicine from Tulane University, New Orleans, La., in 1891, and had been a member of the Medical Society of Virginia since 1906.

Dr. William Sterling Woody,

Of Hopewell, Va., was drowned in the swimming pool at Dupont Club, City Point, Va., on the night of August 9th, in an effort to save a friend who was apparently overtaken with cramps shortly after entering the pool. Dr. Woody was about thirty-three years of age and graduated from Jefferson Medical College, Philadelphia, in 1919. After serving an internship in Petersburg, Va., he moved to Hopewell and shortly thereafter became a member of the Medical Society of Virginia. His wife and two young children survive him.

Dr. John Bernard Halligan,

Of North Emporia, Va., died August 15th, at the home of his sister in Petersburg, Va. Dr. Halligan, who was forty-eight years of age, graduated from the Medical College of Virginia in 1898 and at once enlisted with the Petersburg Grays for service in the Spanish-American War. He also served with the medical corps during the World War. A daughter and two sisters survive him.

Dr. Robert Eugene Wine,

Of Nokesville, Va., died in Washington, D. C., last March, of chronic nephritis. He was a native of Shenandoah County, Virginia, and forty-nine years of age. Dr. Wine received his medical education at the University of the South, in Sewanee, Tenn., from which he graduated in 1899. He was a member of the Medical Society of Virginia, and was at one time a member of the Prince William County, Va., Board of Health.

Tribute of Respect and Affection to Dr. Lankford.

In the tragic death of Dr. Burnley Lankford, the Norfolk County Medical Society records the loss of one of its most beloved and valued members, a faithful and devoted attendant on its meetings. He brought to the scientific and social proceedings of the Society an unbounded optimism and enthusiasm in his search for knowledge. With a mind ever receptive to advances in medicine, his participation in the scientific discussions was ever fruitful and truth seeking.

As former president and at all times an active and constructive member, he made his impress upon the medical life of the community.

Standing always for good feeling and good fellowship, and for close co-operation in the many vital matters constantly confronting the profession and the public, he did much to increase the strength and usefulness of the Society, and to add more and more to its effective work for humanity. His influence, exercised in a quiet and unassuming way, was made doubly effective by the confidence and affection of each member of the Society.

His devotion to duty was exemplified by his cheerful and unremitting work for the wounded in France, a work which did not interest or attract him, and yet one to which he carried such skillful service that he became greatly beloved by those unfortunate and mutilated soldiers, and justly earned the admiration and esteem of his fellow officers.

In his chosen specialty, Obstetrics, he developed a high degree of skill and a justly deserved and wide reputation. He truly loved this work, to the science and practice of which he contributed much. He has also been a definite stimulation to others in the study of these problems.

Dr. Lankford was a member of the Norfolk County Medical Society, the Medical Society of Virginia, the Seaboard Medical Society, the Tri-State Medical Association, the Southside Medical Society and the American Medical Association. He was a fellow of the American College of Surgeons, and a fellow of the American Association of Obstetricians and Gynecologists.

The gap in our ranks his departure leaves will remain unfilled, but the affectionate regard of his fellow members will endure as an evidence of our faith in his high character as a man and as a doctor.

The world, and this community especially, has been made better because Burnley Lankford lived.

He died as he would have chosen, in saving a human life.

SOUTHGATE LEIGH,
Chairman;
LOMAX GWATHMEY,
E. T. HARGRAVE,
C. J. ANDREWS,
Committee.

William Mayo Oppenheimer.

Friends of Dr. and Mrs. St. Julien Oppenheimer, Richmond, Va., will learn with deep regret of the death, by drowning, of their thirteen-year-old son, William Mayo. The accident occurred on September the 6th.

PARKE, DAVIS AND COMPANY

DIPHTHERIA ANTITOXIN

Highly Concentrated, Of Low Protein Content and Maximum Potency, In Syringe Containers of the Latest Type

DIPHTHERIA antitoxin is specific, but the prompt and complete recovery of a patient depends in no small measure upon the use of an antitoxin of the highest potency, used early and in a sufficiently large dose.

Diphtheria Antitoxin, P. D.& Co., is preferred by many physicians because it is a concentrated globulin product, low in total solids and protein content. In its use, skin manifestations and other symptoms of "serum sickness," so often attending the administration of unconcentrated serums, are reduced to a minimum, both in frequency and degree. As a further result the volume of dose required is reduced and the potency of the product is increased.

Each package of Diphtheria Antitoxin, P. D. & Co., when placed on the market contains 40% more antitoxin than the label indicates. This is done to provide for possible deterioration through the handling of the product under varying conditions on the open market, to assure the physician of at least the full labeled strength at any time previous to the expiration date stamped on the package. Every care known to biological science is exercised by us to make Diphtheria Antitoxin, P. D. & Co., safe, dependable, and of the smallest practicable volume.

Diphtheria Antitoxin, P. D. & Co., is supplied in syringes of recent design, in the construction of which the object has been the convenience of the physician and the easy manipulation of the instrument under the trying conditions attending the administration of antitoxin to children.

Let us send you our latest booklet, "Diphtheria, Prophylaxis and Treatment."

PARKE, DAVIS & COMPANY

[*U. S. License No. 1 for the Manufacture of Biological Products*]

DETROIT, MICHIGAN

DIPHTHERIA ANTITOXIN, P. D. & CO., IS INCLUDED IN N. N. R. BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION

Capital $1,000,000 Surplus Earned $1,500,000

ESTABLISHED 1892

To act as Executor, Guardian and Trustee
$30,000,000
of investments held in Trust

Confidential Interviews Invited.

Established 1861

HANGER SUBSTITUTE LEGS AND ARMS

—are the result of sixty-five years' experience in limb manufacture.
—are considered Nature's Rivals. Users throughout the entire world recommend and endorse Hanger Limbs as the best obtainable.

J. E. HANGER, Inc.

WASHINGTON, D. C.,
221-223 G. St., N. W.

BLUEFIELD, W. VA.,
614 Raleigh St.

also in 20 other American and European cities.

Three Travelling Representatives in Virginia

INCORPORATED 1871

LIFE INSURANCE COMPANY OF VIRGINIA

RICHMOND, VIRGINIA.

WE WISH TO CALL ATTENTION, ESPECIALLY TO THE YOUNG MEN OF THE MEDICAL PROFESSION, TO THE ADVANTAGES OF THE ECONOMIC POLICY

This form of Insurance is especially adapted to men of moderate means with growing families, the insurance being arranged so as to give the greatest amount of protection at the time most needed and at the lowest possible premium. This policy contains a very attractive convertible clause which makes the contract elastic.

RATES FOR WHOLE LIFE—10-PAYMENT, 15-PAYMENT OR 20-PAYMENT ECONOMIC POLICY WILL BE QUOTED UPON APPLICATION

JOHN G. WALKER, President

THE N. Y. ACADEMY OF MEDICINE
OCT 11 1926
LIBRARY

Virginia Medical Monthly

OFFICIAL ORGAN OF THE MEDICAL SOCIETY OF VIRGINIA

Vol. 53, No. 7.
WHOLE No. 892.

RICHMOND, VA., OCTOBER, 1926

$2.00 A YEAR
20 CENTS A COPY

CONTENTS.

ORIGINAL COMMUNICATIONS:
"Stomach Trouble." J. Shelton Horsley, M. D., Richmond, Va. 419
The Role of High Frequency Currents in the Treatment of Neoplastic Disease. H. Hartwell Bass, M. D., Durham, N. C. 425
Ureteral Calculi—Review of Forty-One Cases—With Lantern Slides. W. Calhoun Stirling, M. D., F. A. C. S., Washington, D. C. 430
Factors in Lowering Mortality in Biliary Tract Surgery. Louis A. McAlpine, M. D., F. A. C. S., Portsmouth, Va. 435
Thrombosis of the Lateral and Cavernous Sinuses Complicating Acute Mastoiditis—Report of Two Cases, One Involving the Cavernous Sinus as Well as the Lateral Sinus. E. G. Gill, M. D., F. A. C. S., Roanoke, Va. 437
Lobar Pneumonia in Infants and Children—A Statistical Study of 137 Cases Treated in Hospital Wards. James B. Stone, M. D., Richmond, Va. 440
A Plea for a Closer Relationship Between Physician and Patient. J. M. Miller, M. D., Wytheville, Va. 443
A Study of the Causes of Indigestion Based on an Analysis of 4,000 Consecutive Cases. T. Dewey Davis, M. D., and Douglas Vanderhoof, M. D., Richmond, Va. 446
Sterility. C. J. Andrews, M. D., F. A. C. S., Norfolk, Va. 448
Urologic Conditions in Infancy and Childhood. Joseph F. Geisinger, M. D., Richmond, Va. 451
Modern Progress in Our Knowledge of the Etiology of Diseases. Eugene L. Lowenberg, M. D., Norfolk, Va. 455
Diabetes Mellitus—Dietetic and Insulin Treatment. Wilbur M. Bowman, M. D., Petersburg, Va. 459
Improved Hemorrhoidal Technic. J. B. H. Waring, M. D., Blanchester, Ohio 462
The Modern Medical Clinic. Stuart McGuire, M. D., Richmond, Va. 465
Historical Notes on Syphilis. T. Latane Driscoll, Ph. B., M. D., Richmond, Va. 470
CORRESPONDENCE 471
PROCEEDINGS OF SOCIETIES 472
THE TRUTH ABOUT MEDICINE 473
BOOK ANNOUNCEMENTS 474
EDITORIAL 475
NEWS NOTES 478
OBITUARY 484

INDEX OF ADVERTISERS—Advertising Page 5.

Calcreose

FOR BRONCHITIS AND TUBERCULOSIS

Calcreose is particularly valuable in the stubborn bronchial coughs that frequently follow the colds of early Fall.

By loosely combining creosote with hydrated calcium oxide in the form of Calcreose it is possible to secure the benefits of relatively large doses of creosote with little or no gastric distress.

Calcreose represents about 50% creosote in tablet form. It is easily administered and is particularly suitable as an adjunct to other remedial measures.

Powder : Tablets : Solution

Samples of Tablets on Request

THE MALTBIE CHEMICAL COMPANY

NEWARK, N. J. : *Manufacturers of Pharmaceutical Products*

Complete Catalogue on Request

What is
Mead's Standardized Cod Liver Oil?

Mead's Standardized Cod Liver Oil is accepted as a criterion of excellence not only by physicians, but also by other pharmaceutical manufacturers. *It is an established measure of quality regulated by a standard.*

Mead's is the first commercial oil tested to a standard of antirachitic potency. This standard was established after four years of investigation and testing of cod liver oils secured at the site of production in different countries of the world. Biological assay proved the *Newfoundland* oils to be most uniform in the active principle — the antirachitic factor or Vitamin D. Smaller doses of Newfoundland oil healed experimental rickets in animals in a shorter period of time than oils from other countries. Newfoundland oils also produced more prompt clinical evidence of healing of rickets in bones of infants as seen by the radiograph.

Standardization of Mead's oil means:

The ownership of forty rendering plants in Newfoundland.

The rendering of oil from *strictly fresh cod livers* within four hours after the fish are caught.

A standard, uniform method of rendering each batch of oil.

The careful removal of stearine — the non-antirachitic factor.

The numbering, registering, and biological assay of each batch of oil.

The selection for the physician of batches of oil that meet the standard for biological assay, and the disposal of oil under the standard to tanneries and soap manufacturers.

That the standard oils must show definite healing in severe rickets in experimental animals in five days when one part oil to 400 parts diet is fed to the rat. Some of our oils test even higher than this.

Mead's Standardized Cod Liver Oil is a trustworthy product, and if given to infants during the first two years of life, will greatly reduce rickets. The physician is gratified with the results obtained, and protects the baby in his care when he specifies *Mead's*.

Samples and scientific literature sent cheerfully on request.

MEAD JOHNSON & COMPANY, Evansville, Indiana, U. S. A.

Manufacturers of Infant Diet Materials Exclusively

Virginia Medical Monthly

Official Organ of the Medical Society of Virginia

Vol. 53, No. 7.
WHOLE No. 892.

RICHMOND, VA., OCTOBER, 1926

20 CENTS A COPY
$2.00 A YEAR

Original Communications

"STOMACH TROUBLE."*

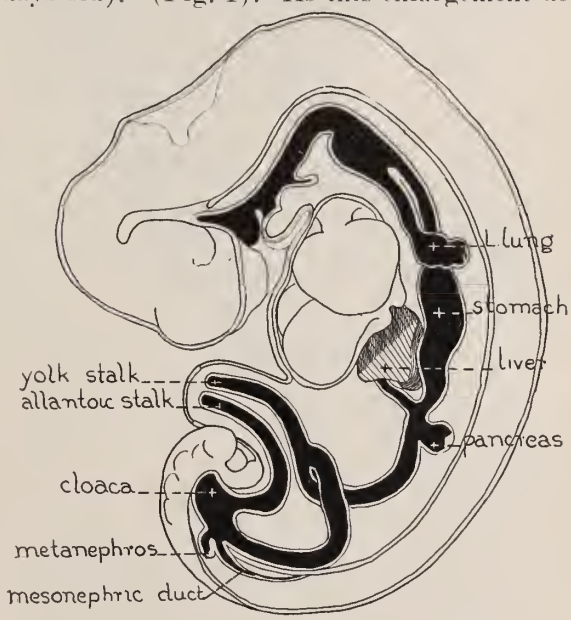
By J. SHELTON HORSLEY, M. D., Richmond, Va.

Headache, backache and stomach trouble make up a large proportion of human miseries. In this group, stomach trouble looms large. Most diseases that are serious and many trivial affections are accompanied by some stomach symptoms. Stomach trouble may develop from a tumor of the brain or an infection of the foot. In the symptomatology of practically all the acute infectious diseases one of the first symptoms is anorexia, nausea and vomiting. Toxic conditions of all kinds may cause anorexia or nausea. Psychic shock or worry, trauma and improper diet are common causes of stomach trouble. These causes usually produce symptoms without gastric lesions. Organic affections of the stomach, such as ulcer or cancer, give rise to stomach trouble, though occasionally they exist for a long time without any gastric symptoms.

In such a chaotic and confused aggregation of causes for so common a complaint, it is natural to expect there will be divers and sundry remedies, many of them empirical and many of them inefficient. Much of this confusion, however, can be clarified by a study of the physiology of the stomach. It is impossible to have a proper conception of the abnormal workings of an organ or a machine without an understanding of the normal function. No one would undertake to diagnose or treat an imperfectly running motor without knowing how it acted when things were going well. And yet in treating stomach trouble too frequently empirical remedies are administered without any consideration of the normal action of the gastro-intestinal tract. Numerous diets are exploited, ranging from raw eggs to sauerkraut. Cultish methods of regulating diet, in which mastication must be carried out in a definite manner and time, or in which certain classes of food must either be adopted or avoided just on general principles, have their peculiar advocates. Occasionally these methods succeed, which makes their adherents all the more enthusiastic. The same thing is true of cults in general. If an automobile mechanic would insist upon regulating the carburetor for every trouble of a motor, it is, of course, conceivable that in some instances his adjustments would correct the trouble; but when a spark-plug is dirty or a cylinder cracked, or the distributor is broken, the carburetor adjustment would be of no avail. So, in treating stomach troubles, various phases of this complaint can be properly comprehended only with a conception of normal function. A study of function necessarily implies a knowledge of structure; so we will briefly review the embryology and structure of the stomach in order that we may clearly discuss function.

Embryology

The stomach first appears as a laterally flattened fusiform enlargement of the foregut in embryos, 4 to 5 mm. in length (twenty-one days old). (Fig. 1). As this enlargement de-



5 m.m. human embryo. (21 days)
(Kollmann)

Fig. 1.—The entodermal canal and its derivatives in a reconstruction of a 5 mm. human embryo 21 days old. (His model).

*An Address on Surgery, delivered by invitation before the Medical Society of the State of North Carolina, at Wrightsville Beach, June 15, 1926, and read before the Second Clinical Congress of the Connecticut State Medical Society, at New Haven, September 22, 1926.

scends the digestive tube above it is elongated, forming the esophagus. This appears about the fourth week. A short distance distal to the primitive stomach the foregut opens freely into the yolk sac. This opening at first is wide, but later is narrowed into a small tube called the yolk stalk or vitelline duct. The allantoic duct arises from the caudal, or blind, end. As the development proceeds the stomach dilates locally to form the fundus, and the subsequent greater growth dorsally forms the dorsal greater curvature. At this time the stomach faces right and left. The intestinal tube is lengthened, and the attachment of the mesoderm dorsally is drawn out and forms a common mesentery which is along the greater curvature of the stomach and lies dorsally. (Fig. 2).

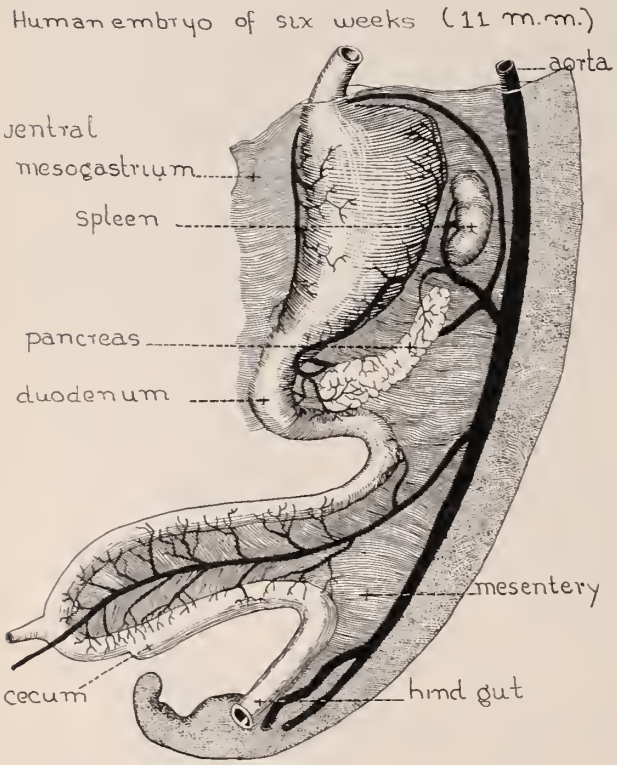


Fig. 2.—Abdominal portion of the digestive tube and its attachment to the common mesentery in a 11 mm. human embryo of six weeks. (Kollmann).

The greater curvature of the stomach develops much more rapidly than the lesser curvature, and gives the characteristic appearance to the stomach. The stomach rotates and the vagus nerve is carried with it, so that the left vagus is on the ventral surface of the stomach and the right is posterior. During the second month the epithelial growth almost occludes the esophagus, but at the end of this time vacuoles appear among the epithelial cells and serve to enlarge the lumen. Persistence of this constricted condition in the embryonic esophagus produces congenital esophageal stenosis.

During the sixth month the cecum normally descends into the right iliac fossa, and the intestines are elongated. The proximal part of the yolk sac or vitelline duct disappears during fetal life. Occasionally it persists and forms a sac known as Meckel's diverticulum.

Anatomy

The outlines of the stomach are changeable, and depend not only upon the individual but upon the position of the body and upon the contents of the stomach. For these reasons it has been difficult for different observers to fix upon the anatomical divisions of the stomach. For purposes of anatomy, the outline by Cannon, or some slight modification of it, is usually found satisfactory. (Fig. 3). This divides

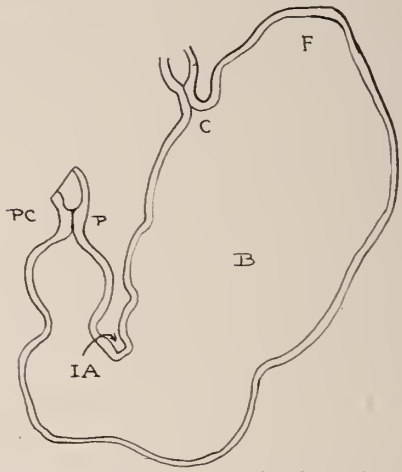


Fig. 3.—Schematic outline of stomach (Cannon). C, cardia; F, fundus; IA, incisura angularis; B, body; PC, pyloric canal; P, pylorus; IA to PC, antrum. The pyloric canal is about 3 cm. in length and very muscular.

the stomach by the notch at the lesser curvature, the incisura angularis, or reentrant angle, and a line is drawn from this point to a point opposite it on the greater curvature. To the right of this line is the pyloric portion, and to the left is the cardiac portion. The part above a horizontal line through the cardiac orifice is the fundus. Between the fundus and the incisura angularis is the body of the stomach, or the pars media. The pyloric portion of the stomach is divided by some observers into three parts, and by others into two. The portion of the stomach, about 3 cm. long, which terminates in the pyloric sphincter, is the pyloric

canal, and that portion between the pyloric canal and the incisura angularis is the pyloric antrum. The antrum is sometimes subdivided into the antrum and the vestibule, but this seems unnecessary.

The stomach has three layers of muscle. The outer layer is the longitudinal, and is a continuation of the longitudinal muscle of the esophagus. This coat forms a narrow and powerful band of muscles along the lesser curvature, and a broader but feebler band along the greater curvature. The bundle along the lesser curvature spreads out in the pyloric region and becomes thinner at this point. The middle or circular layer is arranged in circular bands which cover the stomach with the possible exception of the fundus. This layer is directly connected with the circular muscular coat of the esophagus and of the duodenum. It is particularly powerful at the pylorus and serves to form the aggregation of muscle making the pyloric sphincter. The transition of these circular fibers to those of the duodenum is sudden, though the connection is plain. The third and deepest layer of muscle fibers is the oblique layer. Upon the anterior and posterior borders of the stomach these oblique fibers diverge, and along the lesser curvature they run parallel.

The mucous membrane is separated from the muscle of the stomach by the submucosa, which supports the blood vessels and lymphatics and Meissner's plexus that is distributed to the mucosa. The larger plexus, or the myenteric plexus, of nerves is between the longitudinal and circular muscular coats. The blood vessels in the pyloric portion of the stomach and in the first part of the duodenum have a peculiarly long course, which predisposes to thrombosis. In the cardiac portion of the stomach the gastric glands are long and tubular, and contain chief cells and parietal cells. The chief cells are called central or peptic cells and secrete pepsinogen which makes pepsin. The parietal cells are responsible for the hydrochloric acid, though it is probable that they do not secrete acid as such but as ammonium chloride. The pyloric glands secrete no acid or pepsin, but a clear material which is alkaline in reaction. It is important to know this. Brunner's glands penetrate into the mucosa of the pyloric end of the stomach for some distance.

The extrinsic nerve supply of the stomach is from the vagus and the sympathetic. The vagus was formerly supposed to carry all the motor impulses and the sympathetic the inhibitory. As a matter of fact, the vagus is a bundle consisting of a number of fibers of different types, and while many fibers that conduct motor impulses are undoubtedly contained in the vagus, some that carry inhibitory impulses are found there also. The sympathetic likewise carries some motor fibers in addition to its fibers for inhibitory impulses.

Physiology

There is probably no absorption of food or water from the stomach. Highly concentrated sugars may be taken up to some extent. Alcohol and drugs are freely absorbed from the mucosa. Food in the stomach at first retards peristalsis. During this time the ptyalin from the saliva may continue to act upon the starches until the medium becomes well mixed with the acid gastric juice and is acid in reaction. Pytalin acts in both an alkaline and a neutral medium. Peristalsis seems to begin about the middle of the body of the stomach, and proceeds with increasing vigor toward the pylorus, while the fundus and the adjoining cardiac portion are in tonic contraction. Cole has shown that there are one, two, three or four cycles in the gastric peristalsis, and that most stomachs empty on the four-cycle arrangement —that is, four different waves can be noted at the same time. There is a period of contraction, or a systole, and a period of relaxation, diastole. The systole occupies seven-tenths of the time of the cycle, which is two to three seconds. Not all of the waves that originate in the body of the stomach reach the pylorus. Klein has shown that some of them only go so far as the pyloric antrum, and also that others apparently originate about the pyloric antrum and proceed toward the pylorus. Klein has also noted that solid material impacted in the pyloric antrum reverses peristalsis.

The mechanism of the emptying of the pyloric sphincter is interesting. Formerly it was thought by Pavlov and Cannon that the pyloric sphincter emptied largely by chemical control. When the contents of the stomach became very acid the pyloric sphincter relaxed, and when the contents of the duodenum became slightly acid it contracted. It is true that contraction of the pyloric sphincter can be initiated by placing a strong acid on the duodenal mucosa, but this doubtless only acts as an irritant because mechanical trauma of the duodenal mucosa will have some effect. Besides, if excessive acid in the stomach were necessary for the pylorus to open, in cases of achylia the

pylorus would never relax. According to Cole, Luckhardt and others, the pyloric sphincter probably relaxes somewhat with each strong gastric peristaltic wave that reaches it.,

Alvarez in the last few years has shown that peristalsis is to a large extent myogenic in origin. While the external nerve supply has much to do with conducting reflexes from a distance, the routine work appears to originate in the muscle in peristalsis of the stomach and intestines somewhat as it does in the heart. The lesser curvature, as has been noted in the embryologic development, is the original, practically unchanged, portion of the gastro-intestinal tract. The greater curvature is the portion that has bulged out and become distorted. Alvarez has shown that if a strip of muscle is taken from the lesser curvature near the esophagus and placed in oxygenated Locke's solution, it will have a rhythmical contraction of eleven per minute, whereas a strip taken from near the pylorus on the greater curvature will contract at the rate of two per minute. Similarly, a strip from the duodenum will contract about twenty times a minute, whereas in the terminal ileum the rate of contraction is only about ten times per minute. In this way peristalsis results from what he terms gradients, and from the most sensitive and active portion the movement is initiated. During gastric peristalsis the cardiac portion of the stomach is in tonic contraction and acts as a rubber bag forcing food into the pyloric portion where peristalsis is active.

Eugene Klein, of New York, has confirmed Alvarez' work. He thinks that portions of the lesser curvature near the esophagus and also near the incisura are centers somewhat like the sino-auricular node of the heart and that the impulse for peristalsis is initiated there and peristalsis begins as ripples unobservable roentgenographically until the more pronounced contraction appears about the middle of the body of the stomach. He has called attention to the fact that an ulcer along the lesser curvature will produce spasm of the corresponding segment of the stomach, whereas an ulcer on the greater curvature may cause practically no spasm or symptoms. Experiments in which the lesser curvature has been injured or removed have shown that there is marked interference with the emptying of the stomach, but if the stomach of an animal is divided almost down to the lesser curvature and the lesser curvature left intact with even a small opening, little or no interference with the emptying occurs.

The theory of Edkins that there is a specific hormone secreted by the pyloric mucosa of the stomach which is absorbed and stimulates gastric juice has not been proven. There are many substances which, injected into the blood, will cause a secretion of gastric juice, such as extract of strawberry, meat extracts and extracts of spinach.

Carlson has stated that there is no such thing as hyperacidity,—that the variation is chiefly downward, beginning with one-half of one per cent hydrochloric acid. He thinks that the gastric juice has been too much glori ed and in a study of gastric function in three individuals in whom there was a gastrostomy because of cicatricial esophageal stenosis he was able to draw out the so-called appetite gastric juice and digestion would proceed fairly satisfactorily. Ivy in more recent work has elaborated the causes of gastric secretion. Pavlov has demonstrated the appetite gastric juice which comes from the sight or smell of food and from the sensation produced by food in the mouth. Later, the presence of food in the stomach causes gastric juice to appear. This is not solely mechanical, because inert substances, such as sand, applied to the gastric mucosa, produce no gastric juice, but cause mucus. The exact stimulus in food for gastric juice is not clearly understood, but meat extracts and bread in which there is a certain amount of protein undoubtedly stimulate gastric juice markedly. Ivy has shown that some substance stimulating the secretion of gastric juice is absorbed in the blood during digestion. A spastic pylorus or mechanical obstruction which delays the emptying of the stomach and prolongs the contact of food with the gastric mucosa will cause an increase of gastric juice and produce an apparent hyperchlorhydria, which is really due to the normal reaction of the stomach to the prolonged contact of food. Measures that without irritation tend to empty the stomach more readily will lessen the amount of gastric juice.

The chief action of the gastric juice is on proteins, which it converts first into acid albumin or syntonin, then into primary and secondary proteoses and finally into peptones, and this process is continued still further to amino-acids in the small intestine. Fats and starches are practically not acted upon at all in the stomach. Proteins, then, not only call for gastric juice but they also stimulate peristalsis.

The acidity of the gastric juice varies not only with the individual, but varies in the same individual from time to time. The hydrochloric acid and the pepsin in gastric juice is more concentrated when secretion is rapid during the process of digestion. The presence of a high degree of hydrochloric acid, or so-called hyperchlorhydria, is not necessarily a forerunner of ulcer. Dragstedt produced in dogs in which there was a low hydrochloric acid content in the gastric juice an artificial peptic ulcer, and found the hydrochloric acid content was elevated. We know that in other regions the presence of an irritant often tends to increase the secretion, so it seems more probable that if there is any relation between high hydrochloric acid content and ulcer, it is one in which the ulcer is the cause and the high hydrochloric acid the effect.

Derangements of Gastric Function

Probably the most common of the serious deficiencies in the secretion of gastric juice is the lack of acid, or achylia gastrica. This may be from various causes, some of which are not thoroughly understood. Many cases of achylia gastrica are doubtless due to some toxic substance that affects the glands of the stomach and so diminishes secretion. For example, in pernicious anemia achylia is an early and constant symptom. Cancer in any portion of the body elaborates a toxic material which often causes achylia gastrica. This is particularly true of cancer of the stomach, possibly because of the proximity of the malignancy and consequently greater opportunity for the gastric glands to be affected. There is nothing pathognomonic, as is sometimes supposed, in the lack of acid in the gastric juice in carcinoma of the stomach, because this condition occurs from carcinoma elsewhere. Whether the cause can de definitely ascertained or not, the administration of large quantities of dilute hydrochloric acid, about 1 dram in water or milk three times a day, may be beneficial.

At least 80 per cent of stomach troubles are due to interference with the motor mechanism, and not from affections of secretion. The stomach has a sensory nerve supply which is small, and the sensory fibers terminate in the muscle and do not reach the mucosa. When there is a lesion, as an ulcer in the pylorus, the accompanying congestion sensitizes the nerve fibers and makes them more liable to initiate impulses of pain, just as hyperemia on the hand around a boil would make the nerve fibers supersensitive. Consequently, contraction or spasm which under ordinary conditions would cause no discomfort may give rise to pain when there is hyperemia from an ulcer. Then, too, Cannon, Carlson and others have shown that hunger pains which are synonymous with intense contraction of the stomach may be produced by prolonged fasting.

The theory of Alvarez, of the myogenic origin of peristalsis, which has been confirmed by Klein, holds for most of the actions of the stomach, because the extrinsic gastric nerves of dogs can be severed and while peristalsis will be markedly interfered with for a few days it will eventually proceed almost normally; this does not mean, however, that the external gastric nerve supply is unnecessary. Many reflexes are produced through these nerves. Roentgenologists have noted the ileocolic reflex, by which when the lower ileum empties into the cecum the pyloric sphincter relaxes almost immediately. But the work of Alvarez has served to give a logical explanation for many phenomena of stomach trouble which heretofore could not be explained. He has shown, among other things, that the sensitive muscle of the gastro-intestinal tract where peristalsis is initiated and where the rate of contraction is high, is more affected by toxic influences than is the more slowly contracting muscle. In dogs or cats with influenza he has found that the muscle in the lesser curvature near the esophagus contracts more slowly than normal, whereas muscle near the pylorus may be but slightly affected. When strips of the highly active muscle from the lesser curvature and strips of slowly acting muscle from the greater curvature are placed in oxygenated Locke's solution, both contracting at their respectively proper rates, it will be found that the rapidly contracting muscle will be slowed down by the gradual reduction of oxygen in the Locke's solution before the slowly contracting muscle is affected. The former is not only more sensitive, but it is less hardy.

Interpretation of Symptoms

With these physiologic facts before us, much can be explained that was formerly but poorly understood. We can see how acute infectious diseases, such as measles, pneumonia, and diphtheria, will cause nausea and possibly vomiting because toxins decrease the function of the sensitive muscle along the lesser curvature near the eseophagus where peristalsis is initiated.

whereas the slower and more hardy muscle is but little affected. In this way, the mechanism of peristalsis is upset, and it may be that there is sufficient change to produce an actual reversal of peristalsis. Thus, there may be anorexia and nausea, and possibly vomiting.

We know, too, that pylorospasm is affected reflexly and that the impulses are carried largely through the vagus nerve. Acute appendicitis creates impulses through the vagus, which tend to produce contraction of the pylorus and the firm contraction may not only cause pain but may so elevate the muscular activity in this region as to cause vomiting.

Walter Hughson, of Johns Hopkins Hospital, has shown that in marked reflex pylorospasm caused by injury to the peritoneum section of the vagus nerve just below the diaphragm will relieve the pylorospasm, as it breaks an arc in the reflex.

Analyzing such common complaints as biliousness, waterbrash and heartburn, we can find a logical explanation for them. Stomach trouble, or so-called indigestion, may be assumed to be due in a large proportion of the cases to a deranged motor mechanism. If there is irritation about the pylorus, pylorospasm and delayed emptying may occur. If there is a toxic affection of the more sensitive muscles, they may be so weakened that the gradient will not satisfactorily empty the stomach; or there may be a combination of these two factors. So-called biliousness, coated tongue and heartburn are due, according to Alvarez, to reversed peristalsis, from irritation at the pylorus or lower in the gastro-intestinal tract; the cardiac sphincter is relaxed and the gastric juice is extruded into the esophagus. It reaches the upper part of the esophagus, where there is smooth muscle fiber, and is quickly swallowed, but a bitter taste results. Alvarez has noted that in cases of heartburn almost always the contents of the esophagus are acid, where normally they would be alkaline. This is not due to any excess acid in the gastric juice, but gastric juice does not normally belong in the esophagus. In women who are pregnant, when the activity and gradient of the lower segments of the intestine are raised because of the hyperemia of pregnancy, it is a common thing to find nausea, sometimes vomiting, and decay of the back teeth from regurgitation of the gastric juice. It does not seem probable that a physiologic condition such as pregnancy should always be accompanied by nausea due to a toxemia. Toxemia is pathologic, but pregnancy is almost always accompanied at some time during the terms by nausea, heartburn, and waterbrash.

A coated tongue is often due to regurgitation of the gastric and duodenal contents. The mucosa of the tongue has no unusual glands and is coated either because of sepsis in the mouth or sinuses, or by regurgitation of the gastric and duodenal contents. In other words, fecal contents from the small bowel come back in cases of "biliousness" (disturbed motor mechanism) and coat the back of the tongue.

Treatment

The practical application of these observations is obvious. First of all, it should be determined whether the stomach trouble is due to psychic influences, to toxic material or to a spasm. There is a possibility of improper gastric secretion causing it, but this is not great. If there is a toxic cause, such as a focus of infection, it should be treated. If the nerves are supersensitive from anxiety or from psychic influences, this should be corrected. It is well known that the secretion of bile has nothing to do with so-called biliousness. A temporarily deranged motor mechanism may sometimes be set aright by a purgative.

The administration of alkalies, and particularly of soda, often gives relief from stomach symptoms. This is primarily not because of neutralization of the acid, but because a high acid content in the gastric juice may tend to increase peristalsis and there may also be some indirect effect of the soda upon the muscles of the stomach. Alkalies given indefinitely, particularly in large amounts, may do much harm by irritating the stomach and by causing alkalosis. Probably calcium carbonate is the least injurious alkali to be given continuously, as it acts only in the presence of a free acid. Chewing gum may increase saliva and so decrease gastric acidity. Belladonna and its preparations often relax spasm of the pylorus and so regulate peristalsis. Administration of a purgative sometimes has an irritating effect which tends to raise the rate of contraction in the upper segments of the gastro-intestinal tract, according to Alvarez, and so re-establishes the gradient.

Pure gastritis without ulcer or caustic chemical irritant is an infrequent and indefinite lesion. Some pathologists doubt if it ever occurs. Derangements of the motor mechanism are quite common. One of the best principles for treatment is the old principle of rest, em-

phasized by Hilton sixty-five years ago, and rest means avoiding function as far as possible. If, then, we find that proteins stimulate both the peristalsis and the secretion of the stomach, it is best to reduce the intake of proteins. Carbohydrates and fats are not at all affected by the gastric juice. By balancing the diet so that the intake of food will be no more than is necessary to maintain life, and by giving the stomach as little work as possible, physiologic rest for the stomach is established. The protein of milk is less stimulating than meat proteins. Water has but little effect upon the stomach.

Arrangement of the diet, arrangement of work, and correction of the psychic and toxic influences so as to lessen the burden on the stomach are the main factors in the treatment of stomach trouble.

If surgery is indicated for organic gastric diseases, the object should be to remove the

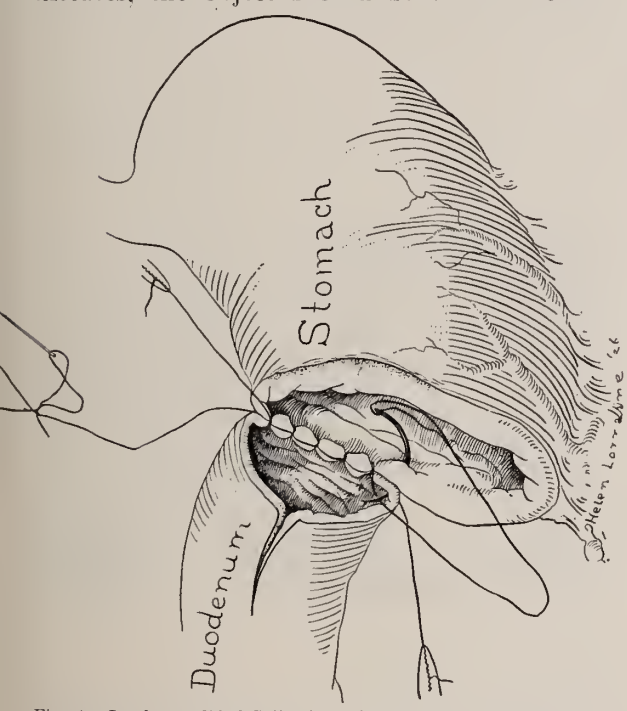


Fig. 4.—In the modified Billroth I, the union is made along the lesser curvature to insure the continuity of the axis of peristalsis. An incision is made in the anterior wall of the duodenum for a distance of about an inch or an inch and a half. This flares open the duodenum and makes a wide surface for union with the stomach so that the tendency toward constriction at this point is overcome.

pathology as far as possible and to restore physiology when it can be done. Peptic ulcers in their early stages should, as a rule, be treated medically by a diet so regulated as to give the stomach as much rest as possible. This cannot be done unless the patient is in bed, because when the patient is about he requires more food and so gives more work to the stomach. If a gastric ulcer does not heal in a few months, particularly because gastric ulcers may become cancerous, a partial gastrectomy should be done and the stump of the duodenum united to the stump of the stomach along the lesser curvature. (Fig. 4). Duodenal ulcers that are refractory to medical treatment may be dealt with surgically by pyloroplasty, a gastroenterostomy, or by excision, depending upon the kind, size, and location of the ulcer. After any surgical operation on the stomach, however, the patient should have medical treatment for several months.

BIBLIOGRAPHY.

Alvarez, Walter C.: The Mechanics of the Digestive Tract. Paul B. Hoeber, New York, 1922.

Carlson, A. J.: The Secretion of Gastric Juice in Health and Disease, Physiol. Reviews, 1923, 3:1-40.

Dragstedt, L. R., and Vaughn, A. M.: Gastric Ulcer Studies, Arch. Surg., 1924, 8:791-810.

Edkins: *J. Physiol.*, 1906, 34:133.

Hilton, John: Rest and Pain. P. W. Garfield, Cincinnati and Cleveland, 4th Edition, 1891.

Horsley, J. Shelton: Surgery of the Stomach and Small Intestine. D. Appleton & Co., New York, 1926.

Hughson, Walter: Reflex Spasm of the Pylorus and Its Relation to Diseases of the Digestive Organs. Arch. Surg., July, 1925, 11:136-151.

Ivy, A. C., and Farrell, J. I.: Contributions to the Physiology and Gastric Secretion. *Am. Jour. Physiol.*, Nov., 1925, 74:639-649.

Ivy, A. C., Lim and McCarthy: *Am. Jour. of Physiol.*, 1925, 74:616.

Klein, Eugene: Gastric Motility, I. The Origin and Character of Gastric Peristalsis. Arch Surg., Feb., 1926, 12:571-582.

Klein, Eugene: Gastric Motility, II. The Conduction of the Gastric Peristaltic Wave. Arch. Surg., Feb., 1926, 12:583-590.

Luckhardt, A. B., Phillips, H. T., and Carlson, A. J.: *Am. J. Physiol.*, 1919, 50-57.

THE ROLE OF HIGH FREQUENCY CURRENTS IN THE TREATMENT OF NEOPLASTIC DISEASE.*

By H. HARTWELL BASS, M. D., Durham, N. C.

Foreword.—Experience has taught that those who depend upon any one method in the treatment of malignant disease are doomed to disappointment.

Operative surgery, radium and the X-rays are equally important. All of these are employed in our hospital. We, therefore, hold no brief for any particular method; but experience has demonstrated the extreme importance of electrothermic methods, which, through lack of knowledge, have not taken their rightful

*Read before the Seaboard Medical Society at Norfolk, Va., December, 1925.

place in surgery. We consider them second to none, and, in many instances, superior to all others. Consequently, the object of this paper is to emphasize the importance of these methods without detracting from the others, devoting it to a brief description of the currents and a discussion of the rationals, instrumentation, technic, clinical and histological findings.

There seems to be some discussion at the present time as to the proper nomenclature of high-frequency terms. The terms here used with reference to desiccation were first introduced by my associate and co-worker, Dr. William L. Clark, of Philadelphia. Dr. Clark named them according to the macroscopical effect upon tissue. The coagulation terms originated with Dr. E. Doyen. Two tissue changes under this head will be discussed—desiccation and coagulation.

Currents Used.—High-frequency currents,

Mr. L. Case No. 1834.
Referred: February 26, 1926.
Diagnosis: Squamous cell carcinoma of lower lip.
Operation: Lesion removed by coagulation.
Treatment: Glands of the neck radiated with radium and fractional X-ray.
On right is shown improvement on May 7, 1926.

as their name implies, are those in which the vibrations and oscillations are so rapid that there is no faradic effect upon the tissue. There is no contractility or muscular response to the currents; only heat is produced, caused by the resistance the tissue offers to the passage of the currents, with its millions of vibrations and oscillations per second.

These currents were first described, in the case of the monopolar, by Oudin, and the bipolar by d'Arsonval.

The desiccation current, as described by Oudin, was first produced by a high-tension static current transformed into a high-frequency of suitable quality by means of Leyden jars of sufficient capacity, and a resonator supplying the proper induction. At the present time these currents are produced by a suitable transformer in connection with Leyden jars or mica plates and solenoids.

There must be a proper balance between these several units, so as to produce and deliver a current of the right quality. There must be a fineness of adjustment so as to obtain a spark of hair-like fineness, suitable for the most delicate eye work, or one so powerful that it will effectually amputate or coagulate a tongue or a breast. These adjustments are obtained by the use of a multiple spark gap in connection with a rheostat, and even with these the proper intensity and fineness of adjustment cannot be obtained except by experience. A milliampere meter cannot measure accurately a monopolar current, as there is no return circuit.

There is an impression among many that the desiccation and the coagulation currents are one and the same. This is an error, and will be demonstrated both clinically and histologically.

Desiccation, as originally deescribed by Dr. William L. Clark, is produced by a monopolar current of the Oudin type, and, consequently, is of high voltage and low amperage. Its ef-

Mr. P. L. R. Case No. 1614.
Referred: July 14, 1925.
Duration: 12 months.
Complication: Wassermann four plus.
Diagnosis: Squamous cell carcinoma of lower lip.
Previous treatment: Radium and X-ray. No results—seemed to aggravate.
Operation: Lesion removed by coagulation, going well beyond the involved area.
Treatment: Glands of the neck radiated with radium and fractional X-ray.
On right is shown improvement September 11, 1925.

fect upon the tissue is that of a drying or dehydrating process. The structures can be completely mummified without charring. The current may be delivered to the tissue to be treated by an electrode with a pointed needle, held in the operator's hand, under control of an assist-

ant or by a foot switch. There may be a short air space between the needle and the lesion under treatment, or there may be actual contact, and the needle may be inserted deep into the tissues, depending upon the depth the operator wishes to destroy.

The desiccation method is used advantageously when the lesion is localized and a good cosmetic result is desired. There is practically no inflammatory reaction. Scar tissue formation is not stimulated; hence, its good result. The fineness of adjustment enables one to treat lesions of the eye with the greatest accuracy. Corneal ulcers, pterygium and trachoma are best treated by this method, without fibrosis and its resultant contractures. Localized lesions of the larynx, bladder and rectum, erosions of the cervix, urethral caruncle, yield readily to this treatment. Moles, papilloma, angioma, naevus pigmentosus, leucoplakia, lupus vulgaris and erythematosus, malignant lesions of the skin and mucous membrane, and many other pathlogical conditions are amenable to the desiccation method.

I desire to call your attention to this method in the treatment of hemorrhoids, and refer you to a paper which I read before this Society last year, entitled "The Treatment of Hemorrhoids by Desiccation under Local and Sacral Anesthesia."

Infected tonsils are successfully treated by the desiccation method, and is especially indicated where it is desired to conserve the capsule as a barrier to infection. It is the preferred method in cases attended with great surgical risk. The tonsil can be desiccated down to its capsule without pain, hemorrhage, or secondary inflammation, by a topical application of a 10 per cent cocaine solution, the current sterilizing and destroying all infected tissue.

Coagulation is produced by a bipolar high-frequency current of the d'Arsonval type, utilizing a multiple spark gap. There are numerous electrodes of different shapes, for the treatment of cancer by this current, from the technique of Doyen to the flat electrodes of Corbus. I prefer to use the large asbestos pad as the indifferent electrode, and a pointed needle for the hand electrode. There being no polarity to the current, it makes no difference upon which side of the apparatus the poles are attached. The asbestos pad is thoroughly saturated with water and placed under the patient's naked back. The pointed needle, that is, the hand electrode, may be used as a continuous spark, or it may be inserted into the growth to any depth that may be desired. This current differs from the monopolar, being of a moderate voltage and a high amperage. It is more penetrating, the heat extending far beyond the

Mr. W. B. Case No. 1821.
Referred: February 23, 1926.
Diagnosis: Squamous cell epithelioma type No. 2.
Present condition: Lesion involving left side of mouth, tongue and buccal surface, extending back as far as the tonsils. Lower jaw involved with sequestra formation and necrotic fracture.
Treatment: Radium needles inserted into growth for twelve hours. One week later was followed by the removal of lesion by coagulation. Jaw bone was resected from symphysis to left articulation. External carotid artery ligated. This was followed by cross fire radium and fractional X-ray radiation to the glands of the neck.
On right is shown improvement on May 7, 1926.

point of contact of the hand electrode. The malignant cells, being embryonic and more sensitive to heat than the normal tissue cells, are rendered harmless if not destroyed at quite a distance from the point treated.

This bipolar current is registered by a milliampere meter, with a capacity of 200 to 2,000 milliamperes, depending upon the intensity of the current desired, which is dependent upon the size and depth of the structures to be treated.

There are many variations in the technic employed in the treatment of superficial and deep-seated lesions. We prefer the hand electrode of the Universal type, making our own needles and shaping them to meet the requirements of the case. Knitting needles of sufficient length, or large cambric needles, or very fine steel sewing needles are generally used, bending them at their points to any angle necessary for the requirements of the case.

If the hand electrode is held at some distance from the lesion, it will only receive the invective spark and the penetration will not be so deep. This may also be used for superficial lesions. If thorough coagulation of great depth is desired, the needle should be inserted

slowly, watching the effect of the current upon the tissue, and as it becomes thoroughly coagulated, withdraw the needle and insert it at another point, until the lesion is completely surrounded by a coagulated area. Then the center of the lesion may be treated in like manner, until the growth is coagulated throughout, and then may be curetted, or removed by scissors.

Mr. T. M. Case No. 1659.
Referred: August 24, 1925.
Duration: 8 months.
Diagnosis: Squamous cell epithelioma type No. 2.
Wassermann: Negative.
Treatment: Lesion removed by desiccation. Gland of the neck radiated with radium and fractional X-ray.
On right is shown improvement on September 9, 1925.

It is well to go beyond the diseased area so as to be certain that all diseased tissue is included. After the coagulated tissue has been removed, then a less intensive current should be used, to stop all bleeding and protect the wound from future hemorrhage. When the growth is in proximity to or fed by large blood vessels, the latter should be ligated to prevent hemorrhage when the slough separates. All extensive lesions about the tongue or mouth should be preceded by ligation of the external carotid arteries before being treated. Often we do this under local anesthesia a few days before the current is used, but I think it best that the ligation be done at the same time as the current operation.

The action of the current upon the tissue is that of a steaming and boiling process. The tissue is coagulated without charring, differing from the desiccation current by its effect upon the tissue treated. It is more penetrating and more destructive. Fibrosis is stimulated, and the wound heals with decided scar tissue formation; hence, its undesirability for the removal of tonsils and hemorrhoids.

Whether employing the desiccation or the coagulation method, the object should be to destroy the lesion at one sitting. Even this differs from other methods in the treatment of cancer. When one has used radiation to a limit, both by radium and X-rays, or operated surgically for the removal of a growth, they have, in a measure, reached their limit. It is not so with this method of treatment; you can always go farther or retreat at any time. There is no limit to its application. The tissue treated should be immediately removed, except in the case of mucous membranes. These should be allowed to remain in place and separate slowly to prevent hemorrhage. Devitalized bone will sequestrate in about six weeks and then can be easily removed. Differing from operative surgery, diseased tissue alone may be treated and the healthy structures left intact to prevent further invasion. There is practically no trauma and but slight impairment to the healthy tissues. When the lesion is localized, it is generally unnecessary to use radium or X-rays, as this treatment is quite effectual.

There are many cases in which the electrothermic methods are not applicable and radiation and operative surgery are preferable; but our experience has been such that we feel very strongly that the electrothermic methods alone should be used in the type of lesions mentioned. Success or failure depends upon proper technic, and experience alone can teach this. The quality of current cannot be regulated by the number on the rheostat or the manipulations of the spark unless one is possessed of the individual knowledge of current quality. The electrothermic methods should not be used by one unless he has had surgical training. These are distinctly surgical procedures and should be done by a surgeon.

The preparation and after-care of a patient is quite as important as in other surgical procedures. In fact, these wounds require closer attention than ordinary surgical wounds.

The efficiency of these methods is increased in some cases by the judicious use of operative surgery, radium and the X-rays. The electrothermic methods should be used alone only in localized tumors of a type which do not tend to metastasize. Electrothermic methods are peculiarly adapted to the treatment of localized malignant growths in the oral cavity, urinary bladder, larynx, etc. Mouth cases of extensive involvement should be preceded by a temporary gastrostomy, to assure the patient proper nourishment and to prevent irritation during the process of healing. The choice of anesthetics depends upon the extent of the

lesions and their locality. Whenever a general anesthetic is used, it should be removed from the operating room to prevent ignition during the operation.

If the patient begins to recover from his anesthesia before the operation is completed, the procedure should stop and the patient reanesthetized. This can be repeated as often as necessary until the work is done. It is best to precede general anesthesia, when practical, by the hypodermic use of morphine and atropine a few minutes before operating.

The after-care of the wounds should be thorough and persistent. All necrotic tissue should be preserved by some local antiseptic until nature has thoroughly separated it. We prefer the free use of hydrogen peroxide with equal parts of water as a cleansing agent, this

Mrs. M. Case No. 1820.
Referred: February 26, 1926.
Previous treatment: Plasters.
Wassermann: Negative.
Diagnosis: Basal cell epithelioma on tip of nose.
Operation: Lesion removed by desiccation. No other treatment.
On right is shown improvement on April 26, 1926.

to be followed by a moderately strong solution of hypochlorite of sodium. In lesions treated in the oral cavity, these applications should be made at intervals of a very few hours. It not only prevents excessive maceration and sloughing, but frees the stomach of receiving necrotic debris.

The after-care of wounds done by coagulation requires closer attention than those done by desiccation. The desiccation wounds are dry and do not require the constant care and dressing.

Histopathological Findings. — The histopathological studies were made in the pathological laboratories of the Clark-Bass Hospital. In the vast majority of instances, histologic studies of neoplasm are limited to diagnosis, and in order to correlate the histologic findings with the clinical results obtained, microscopic examination of tissue, submitted to desiccation and coagulation, were undertaken. The material used consisted chiefly of epithelioma (basal and squamous-cell types) and normal tissues of laboratory animals. Investigation entailed the study of the effect of the currents on the cells and blood vessels in the immediate and remote areas of the field of operation. The histologic pictures obtained were so well defined and so uniform as to stamp them with certain characteristics. The cells submitted to desiccation were shrunken and shriveled and their nuclei condensed and elongated without a suggestion of cell outline, the whole assuming a mummified appearance. The blood vessels were thrombosed, and there was no evidence of hemorrhage.

In the case of coagulation, the cell outline was entirely lost. The affected tissue elements were fused into a structureless homogeneous mass, presenting an appearance not unlike that of hyalinization.

Since the tissues examined were those obtained at the operating table, no opportunity was offered to observe the cell reaction likely to occur in the zone adjacent to the area treated. Guinea-pigs and rabbits were used for this purpose. Small areas of skin, subcutaneous tissue and muscle were submitted to desiccation or coagulation treatment, and the animals returned to their cages. Several days later sections were removed for study. They revealed practically the same tissue changes already noted, but, in addition, there was round-cell infiltration in the outlying zone, and in certain areas this infiltration was localized around the blood vessels. These are the fundamental principles of pathology upon which the histologic studies were based, and it is in this sense that tissues treated by electrothermic methods present histologic pictures of such uniformity and constancy as to endow them with specific histological characteristics, namely, the shrunken and elongated appearance of the cells and their nuclei, and the round-cell infiltration in the case of desiccation, and the complete loss of cell outline and hyalinized appearance of the itssue and thrombosis of blood vessels in the case of coagulation.

As stated, the electrothermic methods are dependent for their results upon the resistance of the tissue to the current, which manifests itself in the formation of heat. In the case of desiccation, the current being of comparatively low amperage, a moderate degree of heat

is produced, but of sufficient intensity, however, to cause complete evaporation of the water contents of the cells; hence, their mummified appearance.

Mrs. L. S. Case No. 1742.
Referred: November 15, 1925.
Duration: 15 years.
Wassermann: Negative.
Diagnosis: Basal cell epithelioma.
Operation: Desiccation.
On right is shown improvement on February 17, 1926.

Since the mode of cell death is associated with very little degenerative change and scant disintegrated material, there is but a small amount of fibrous tissue as an end result; hence, the good cosmetic result, and, incidentally, the neighboring healthy tissues are spared the devitalization resulting from the formation of an abundant contractible fibrous tissue. The coagulation method, requiring a higher amperage, induces a more intense heat, so that it not only dehydrates the tissues but causes coagulation of the cell protoplasm. This greater degree of destruction results, as we have learned to expect, in proportionately greater amount of fibrous tissue formation.

Thus, in conclusion, not only are the aims attained as stated at the outset of this paper, but the electrothermic methods are placed upon an histologic basis and are correlated with clinical results.

Abstracts have been fully used from my former papers on "Some Recent Thoughts on the Pathology and Treatment of Cancer," read before the North Carolina Medical Society, April, 1924, and also a paper read before the Sixth Councillor District at Oxford, North Carolina, entitled "Treatment of Malignancy by Combined Methods."

Piedmont Building.

Formerly with Dr. Wm. L. Clark, at Clark-Bass Hospital, 2215 Walnut Street, Philadelphia.

URETERAL CALCULI—REVIEW OF FORTY-ONE CASES—WITH LANTERN SLIDES.*

By W. CALHOUN STIRLING, M. D., F. A. C. S.,
Washington, D. C.
Associate Professor of Genito-Urinary Surgery, Georgetown Medical School; Genito-Urinary Surgeon, Georgetown Casualty and Gallinger Hospital.

Etiology.—Among the principal factors involved in the formation of urinary calculi may be mentioned infection of the kidney, urinary stasis, and the excessive excretion of crystalloids in the urine. As a result of animal experimentation, calculi have been produced in the urinary tract from a focus of infection in the oral cavity. This was done by Rosenow and Meisser in 87 per cent of a group of animals, and is very suggestive. Keyser showed that an excessive deposit of urinary salts with subsequent calculus formation could be produced by an alteration of the urinary colloids. G. J. Thomas found infection of the kidney in 75 per cent of his cases of ureteral calculi. In

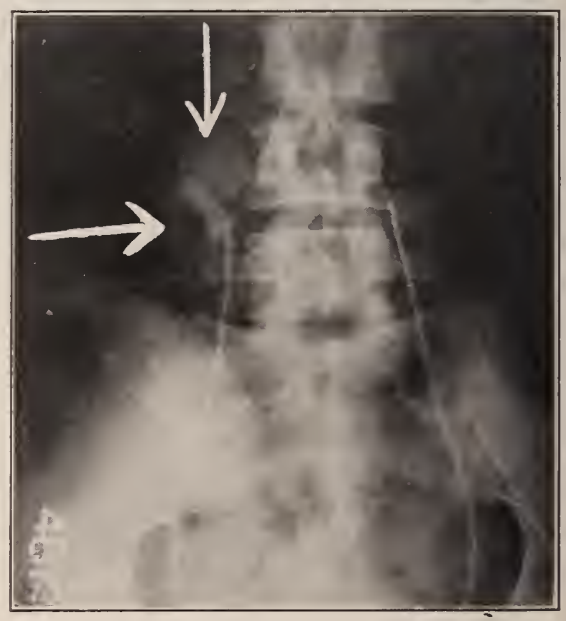


Fig. 1.—Fusiform stone impacted in middle third ureter. Uretero-lithotomy necessary, due to acute infection.

this report of forty-one cases of stone removed from the ureter by the writer, infection of the upper urinary tract was present in thirty cases. We are all acquainted with the frequency with which stone formation occurs in the bladder in the presence of residual urine resulting from prostatic adenoma. Similarly, urinary stasis

*Read before the Medical Society of the District of Columbia, May 19, 1926.

Note—Five other cases have been seen subsequent to this and the ureteral forceps were successfully used in removing a stone in one of these cases.

in the upper urinary tract plays an important part in calculus formation as ureteral kinks, ptosis of the kidney, and congenital anomalies; and ureteral strictures are not infrequently seen, resulting in urinary stasis.

Frequency. — Ureteral calculi have their origin in the kidney and usually become arrested at one of the anatomical constrictions of the ureter. Approximately 75 per cent become impacted in the lower ureteral segment, 15 per cent in the upper ureter, and the remaining 10 per cent in the iliac portion. Bumpus and Scholl found 10 per cent of ureteral stones were bilateral. The incidence of recurrence following the passage of a stone is from 10 per cent to 12 per cent. It has been conservatively estimated that half of the patients with ureteral stone will pass them without treatment, and that 25 per cent of the remainder will pass following manipulation, leaving 10 per cent that will require operative removal.

X-Ray Findings.—A roentgenogram will show the size, location, number of stones, and

Fig. 2.—Kretschmer's method of localizing ureteral shadows. Intra-ureteral shadows bear same relationship to catheters. Stone passed following third manipulation.

which ureter is involved, as well as determine whether or not the stone can be removed without an operation. The opacity of a stone depends on its atomic weight. White reports a series of twenty-four cases and found that calcium oxylate and phosphate occur singly or collectively in 90 per cent of the stones passed. He found that more uric acid stones reach the bladder than do those composed of calcium oxylate. The poor shadow casting properties of uric acid, cystin, and xanthin stones account for the 10 to 15 percentage error of ureterograms in the diagnosis of ureteral calculi. Fortunately this type of calculus is less common than the oxylates and phosphates. Occasionally a stone will be overlooked due to its superimposition on the pelvic bones and transverse process of the spine. This occurred in one case in this report.

Symptoms.—Pain is the symptom most often complained of by the patient and is present in approximately 95 per cent of the cases. If the pain is sharp and colicky, it is indicative of acute blockage of the kidney and ureter, and is caused by spasm of the ureter together with sudden distention of the kidney capsule. In the chronic cases with hydronephrosis or

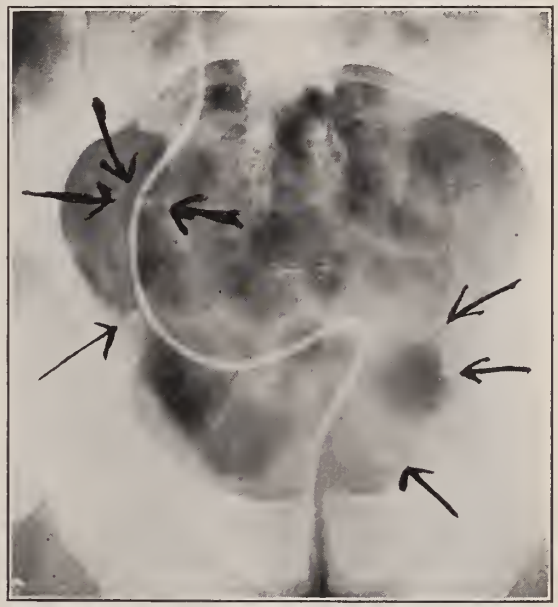


Fig. 3.—Small stone in right ureter with opaque catheter in contact with it. The other shadows were phleboliths. These latter shadows are sometimes confusing if located within the normal course of the ureter. Stone passed after dilatation.

pyonephrosis, the pain is dull and aching in character and is caused by stretching the capsule of the kidney. The pain is often referred along the course of the ureter into the thigh, scrotum, and penis. It frequently becomes localized in the abdomen and often simulates an acute attack of appendicitis, cholecystitis, salpingitis and uterine disorders. Cabot reports one hundred and fifty-three cases of ureteral stone, and found that an appendectomy had been performed in 30 per cent with-

out relief of the original pain. Judd found that 30 per cent of his series of ureteral stone had been subjected to an intra-abdominal operation. Cecil reports a 28 per cent error in diagnosis of this condition. In this series it was found that twelve patients had been operated on without relief of the presenting pain, i. e., an incidence of over 30 per cent. Bladder irritability is usually present at some time during the passage of the stone. As a result of acute obstruction of the ureter with distention of the renal pelvis, nausea and vomiting is not infrequently seen. The presence of either red blood cells or pus in the urine is suggestive of a stone if seen following an acute attack of renal colic. One of these elements is present in the urine in most cases. Pus in large quantities is suggestive of pyonephrosis.

Diagnosis.—The presence of renal colic together with blood or pus in the urine calls for a careful urological examination to determine

Fig. 4.—Plain roentgenogram showing shadows indicated by arrows, superimposed on sacrum. This type of stone is occasionally overlooked. Passed following manipulation.

the source of the irritation. All cases of renal colic should be X-rayed. If a suspicious shadow is seen in the region of the ureters or kidney pelvis, its exact location may be determined by passing a shadow-graph ureteral catheter on the affected side, followed by a stereogram. Further confirmation may be had by doing a ureterogram. Braasch says this should be done in any case in which doubt exists as to the location of the shadow. Many cases have undergone needless operations on the ureter for suspected stones which were found to be calcified glands in the mesentery and adjacent lymph nodes. Judd advised a pyeloureterogram where the symptoms point to a stone and the X-ray is negative. An area of translucency may be found if a stone is present. A weak solution of mercuric-sedium iodide injected in the ureter may reveal the location of a stone by the contrast filling defect. The passage of an opaque catheter without a stereogram is insufficient evidence to warrant a diagnosis of ureteral calculus, as a

Fig. 5.—Migratory stone in lower ureter. Pyelotomy done elsewhere four years ago, at which time stone was in lower ureter. Several successive plates have shown this stone at various levels of the ureter. Uretero-lithotomy required. Result, uremia.

shadow located several centimeters either anterior or posterior to the ureter may seemingly lie in the same plane in an antero-posterior view. A lateral exposure is helpful in ruling out a gall-bladder stone. Migratory stones are seen occasionally and may be very difficult to localize. One case in this group had a migratory stone and had an exploratory pyelotomy done elsewhere without success. Two years later she was first seen by me and the stone located in the lower segment of the ureter. A uretero-lithotomy was done and the stone removed, after several roentgenograms had demonstrated the stone in different portions of the ureter and kidney pelvis. A large bougie passed in the ureter just before opera-

tion will anchor this type of stone and facilitate recognition of the iliac ureter. The wax-bulb catheter offers additional confirmatory evidence of a stone and should be utilized if the X-ray is negative. Edema and irritation about the ureteral orifice on the affected side was found present quite often in this report. The percentage of error in diagnosing ureteral stone is approximately 10 per cent.

Treatment.—Lewis, Bugbee, Fowler, and others are of the opinion that the vast majority of ureteral calculi will pass following cystoscopic manipulation. Hamer, Smith, and Braasch call attention to the present day tendency to wait too long before surgical measures are undertaken. This delay may result in destruction of the kidney from infection and back pressure. Judd says, "About one-half of the patients will require operation in order to rid them of the stone." The successful removal of

Fig. 6.—Ureterogram of previous migratory stone showing stone at arrows. This is the most accurate method of localizing ureteral shadows.

a ureteral calculus by cystoscopic manipulation depends on (1) location; (2) size; (3) number; (4) amount of renal infection; (5) duration of impaction and (6) tolerance of the patient to cystoscopy. Given a patient with a stone not over two centimeters, with very little back pressure and infection and with no local reaction following intra-ureteral manipulation, the majority of such calculi may be successfully removed without operation. However, this method of treatment should not be continued if the patient becomes toxic and develops uremia. Two patients in this series were seen for the first time in a profound state of uremia, and required immediate drainage to relieve the uro-sepsis. The mortality of uretero-lithotomy is practically nil at the present time, so one should not hesitate to open the ureter if an acute infection supervenes and uremia is impending. Beer favors the use of indwelling catheters which may be left in the ureter for several days. This accomplishes two things, i. e., provides drainage and promotes gradual dilatation of the ureter. Some urologists favor the use of chemical dilators, novocain and paperine being used principally. Simply changing the axis of the stone is often all that is necessary to cause expulsion of the stone. Working in collaboration with Mr. Reinhold Wappler, I have devised an instrument for removing small calculi impacted in the lower ureter. Many of these stones are covered with spicules and become imbedded in the ureteral mucosa as a result of spasm. Dilatation fails to remove the stone in many in-

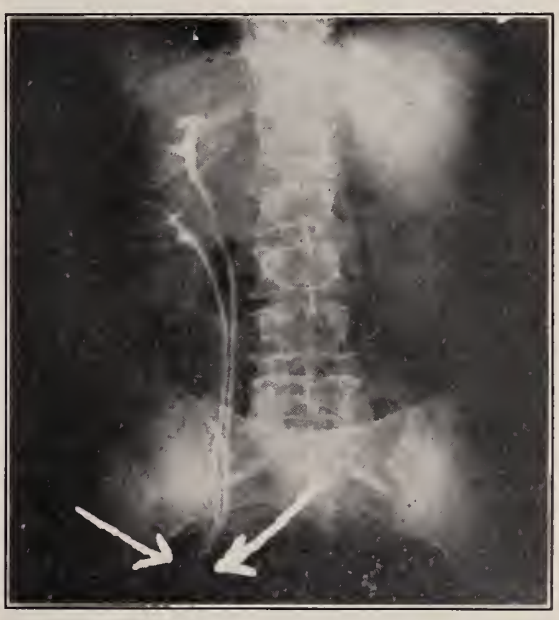


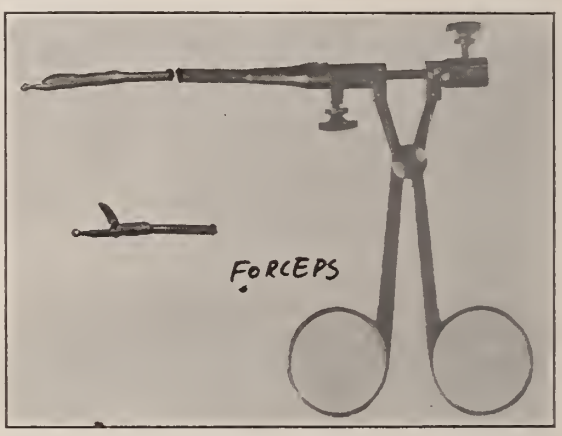
Fig. 7.—Complete unilateral reduplication of left ureter and kidney pelvis with small shadow in region of left ureter. Stereogram is very helpful in localizing this type of shadow.

stances in impacted cases which usually require a uretero-lithotomy. With this instrument a small stone can be grasped and gently withdrawn into the bladder, obviating the necessity for operation. The ureter should be dilated well and sterile oil injected about the stone before the instrument is introduced. The bulbar tip prevents the mucosa of the ureter

being caught in the jaws of the instrument. Fluoroscopy can be used in conjunction with this instrument, giving the cystoscopist invaluable aid in localizing and grasping a small stone. The jaws of the forceps should be closed until they are brought in contact with the stone; then, by gently opening the jaws and manipulating the handles, the stone may be grasped and either withdrawn or the axis so changed that it will pass. This instrument can be used in either the McCarthy or Buerger operating cystoscope. It is quite important to clear up the resulting kidney infection following the passage of the stone in order to prevent a recurrence. The primary focus of infection should be carefully searched for and eliminated. Abscessed teeth and infected tonsils are frequent offenders in this respect.

Fig. 8.—Fusiform stone at uretero-pelvic junction. Stone removed by pyelotomy after withdrawing it into pelvis.

Analysis of Cases.—The average age of the patients in this report was forty years, while thirty patients were male and eleven female. Pain was elicited in thirty-eight, while red blood cells or pus was present in 85 per cent. Three patients required an operation to remove the impacted ureteral calculus. One other patient had the stone crushed *in situ*. In one instance the stone was broken in several pieces and passed at different intervals. An average of three treatments were required to secure passage of the calculus. In several instances an indwelling catheter was left in the ureter for three to six days. This established drainage and reduced the infection considerably in each case. No untoward reactions were encountered in any case, and all were discharged free from pus.



Stirling Ureteral Forceps for removing impacted calculus in the lower ureter.

One case with complete unilateral duplication of the kidney pelvis and ureter was seen. The stone was impacted in the lower ureter; draining the superior or upper pelvis, and resulted in dilatation of the ureter and kidney pelvis. As it is the cephalic pelvis in a double kidney that is usually diseased, this case bears out the hypothesis that infection plays a major role in initiating calculus formation in the urinary tract.

BIBLIOGRAPHY.

1. Braasch, W. F.: Discussion Crowell's Paper. *J. Urol.*, 1921, Sept., Vol. vi, No. 3, p. 256.
2. Braasch, W. F., and Foulda, G. S.: Post-Operative Results of Nephrolithiasis. *J. Urol.*, Vol. xi, No. 6, pp. 525-527.
3. Beer, E., and Hahn, L. F.: Use of Indwelling Catheter to Induce Passage of Ureteral Stone, *J. A. M. A.*, Vol. lxxxiv, pp. 1028-1029, 1925.
4. Cabot, Hugh: Errors in Diagnosis of Ureteral Calculus. *Surg., Gyn. and Ob.*, Oct., 1915, pp. 403-506.
5. Culligan, J. M.: Renal Stones Permeable to X-Ray. *J. Urol.*, Vol. xvi, pp. 559-566.
6. Chute, Arthur L.: The Difficulty in Distinguishing Between Urinary Stones and Calcified Glands. *J. Urol.*, 1925, Vol. xiv, pp. 489-497.
7. Cecil, A. B.: Discussion, *J. A. M. A.*, 1922, Transaction Urology, pp. 112.
8. Hamer, H. G.
9. Judd, E. Starr: The Results of Operative Treatment for the Removal of Ureteral Stones. Papers—Mayo Clinic, 1919, Vol. xi, pp. 277, W. B. Saunders Co.
10. Keyser, Linwood D.: Mechanism of the Formation of Urinary Calculi. Papers—Mayo Clinic, 1925, pp. 454-466. W. B. Saunders Co.
11. Rosenow, E. C.: The Production of Urinary Calculi by the Devitalization and Infection of Teeth in Dogs with Streptococcus. *J. Iowa State Med. Assn.*, Vol. xv, pp. 297, 1925.

12. Smith, George Gilbert: Ureteral Calculus. *Boston Med. and Surg. J.*, Vol. cxci, pp. 435.
13. White, H. P. W.: The Radiographic Features of Urinary Calculi in Relation to Their Chemical Composition and Structure. *Brit. J. Surg.*, Vol. xii, pp. 115-127.
14. Fowler, H. A: Personal Communication, 1926.

Washington Medical Building.

FACTORS IN LOWERING MORTALITY IN BILIARY TRACT SURGERY.*

By LOUIS A. McALPINE, M. D., F. A. C. S., Portsmouth, Va.

A comparative study of the mortality figures of the various surgical diseases of the abdomen brings one face to face with a large number of anatomical and physiological factors which in themselves are the cause of the higher mortality in upper abdominal diseases over that of lower abdominal disease. These factors are to a certain extent definite and fixed, although they exhibit considerable variability in the different sexes and different individuals. It shall be the intention of this paper to mention these factors, but to devote the principal discussion to those factors which are the cause of the higher mortality in upper abdominal diseases, and especially biliary tract diseases, which are more or less under our control from the standpoint of surgical treatment.

It is difficult to make an absolute numerical comparison in mortality percentages of the surgical diseases of the abdomen because of the great variation in these figures as reported by the different clinics. However, certain facts are evident which show the marked difference in the seriousness of upper abdominal surgical diseases and lower abdominal surgical diseases. Thus we observe that appendectomy is performed for acute appendicitis with a mortality that is almost nil. In contrast we observe that almost all surgeons advise against cholecystectomy for acute cholecystitis on account of the high mortality, preferring to wait until the acute manifestations of the disease have subsided. Also, we know that operation for acute suppurative or acute gangrenous appendicitis is performed with a small mortality, while operation for empyemic or gangrenous gall-bladders is attended by a very much higher mortality. Further, we might compare the condition of a woman with double Fallopian tube abscess, who comes into the hospital for operation, with the grave condition of the woman who is brought in with a suppurative gall-bladder.

*Read before the Norfolk County Medical Society, at Norfolk, Va.

These facts are mentioned to emphasize certain anatomical and physiological factors, which influence our surgical results and over which we have no control other than to know them thoroughly and in our treatment endeavor to assist nature from a physiological viewpoint. The factor which comes first and most prominently to our minds involves the question of lymphatic absorption and peritoneal resistance. It is a fact, established by bacteriologists, that the gall-bladder and biliary ducts in health do not harbor bacteria. This is also true of the stomach and small intestine down to the lower end of the ileum and cecum. And there we cross the transverse umbilical line. Above we have a region in which normally the lymphatics have not had bacteria or their toxins to deal with, and, consequently, we have tissue cells which are not resistant to infection. Below, during man's whole existence, the ileum and cecum have been teeming with bacteria, and the lymphatics have absorbed the poisonous products and we have a region in which the cells have an established immunity to infection. This same condition exists in the entire lower abdomen and is responsible for the ability of the peritoneum to localize infection. And, further, the anatomists teach us that the lymphatics of the upper part of the small intestine are much larger and more numerous than those of the lower ileum and cecum or large bowel, and that a veritable network of lymphatics drain the liver and biliary ducts, and to a lesser extent the gall-bladder. Therefore, it is quite evident that the absorption of toxins in this region is much greater and more rapid than the lower abdomen.

Considered again from the anatomical aspect, the viscera of the right hypochondriac and epigastric regions are richly supplied with sympathetic nerves from the great solar plexus and surgical shock is very pronounced from operations in this region, and particularly is this true of biliary tract operations in which we have what is known as "liver shock." The proximity of these organs to the vital organs, such as the heart and lungs, and the reception by them of nerve filaments from the pneumogastric and phrenic nerves only serves to increase the danger from shock.

Mention should also be made of the inaccessibility of the gall-bladder and ducts for surgical approach. This is borne out by the fact that so many different incisions have been sug-

gested for operations in this region. And, even at best, the compact anatomical relations of the gall-bladder, biliary ducts and large blood vessels make surgery in this region difficult.

The writer has taken, in this paper, as a basis for discussion of the complications of biliary tract surgery, the statistical report of the Mayo Clinic for 1922; a report of 888 cases of biliary tract disease as published in the *Johns Hopkins Hospital Medical Bulletin*, and a report of 1,000 biliary tract operations by Dr. Stuart McGuire. A careful analysis of these reports has been made and we find the following conditions listed, in order of their importance, as being the factors to be seriously considered in attempting to lower the mortality rate in biliary tract surgery:

First, the stage of the disease; second, the presence of stones in the common duct; third, hemorrhage and shock; fourth, associated diseases in other organs; fifth, surgical technique.

The Stage of the Disease.—It probably does not come within the province of this discussion to mention the prevention of biliary tract disease, but certainly the greatest factor in reducing mortality of biliary tract operations is the prevention of the development of such lesions that make these operations necessary. I am a firm believer in the theory that biliary duct and gall-bladder infection is frequently secondary to lesions occurring in the area drained by the portal vein, namely, chronic appendicitis and infected or ulcerating hemorrhoids. Therefore, I feel that we all should urge the removal of these defects as soon as diagnosed as a prevention of secondary infections in the upper abdomen. Obviously, the most important thing that could be said about the stage of biliary tract disease is that the earlier the operation, the less the mortality. An uncomplicated infected gall-bladder with or without stones presents a fairly easy case for surgical relief, but if the disease has gone on to the stage of obstructive jaundice or secondary pancreatitis, it is a very different situation and the mortality rate is much higher.

Stones in the Common Duct.—The highest mortality in all biliary tract surgery occurs in those cases of stone in the common duct. The Johns Hopkins report gives a mortality of 24 per cent in these cases and Dr. McGuire reports a mortality of 10 per cent, while the Mayo Clinic's results seemed to have been much better, with a death rate of only 4 cases in 150 operations. The Johns Hopkins Hospital report gives a concise tabulation of the causes of the deaths in 33 of these types of cases and appears to be a fair index of what is to be expected in these cases. The causes of death were (1) peritonitis, 25 per cent; (2) hemorrhage, 20 per cent; (3) pneumonia 12 per cent; and the others died of various causes, such as pulmonary embolism, nephritis, intestinal obstruction, etc. A glance at these figures and the causes of death immediately shows one that the patients treated were very ill at the time of operation; that is, they were suffering from jaundice, cirrhosis of the liver, debility or pancreatitis. It is doubtful whether or not very much improvement in the mortality from this serious situation can be accomplished, but as the Mayo report says in reference to all gall-tract surgery, their improvement could be attributed to (1) the efficacy of the preparation of many of these patients before operation; (2) more accurate observation of the patient immediately after the operation, and anticipating some of the serious complications; (3) experience and better judgment.

From the point of view of the average surgeon, I think it is very important to mention the fact that it is frequently very easy to overlook a stone in the common duct, and that reducing our mortality is just about as liable to be interfered with by this mistake as it is by not employing the proper treatment, when the presence of stone is determined.

Hemorrhage and Shock.—As we all are familiar either from bitter experience or hearsay, there are two types of hemorrhage which occur more or less frequently in biliary tract surgery, and they are complications which had better be anticipated before operation rather than regretted afterwards. These are (1) hemorrhage from lowered coagulability of the blood in the obstructive jaundice cases, and (2) hemorrhage from ligature slipping off the cystic artery or injury to the portal vein.

The first type will be considered from the point of view of its prevention and the second will be later discussed under surgical technique. The Mayo Clinic statistical report for 1922 attributes their low mortality in obstructive jaundice cases to the careful preparation of these patients before operation and they have adopted a method as outlined by Walters, to increase the coagulability of the blood and prevent this type of bleeding. This method consists of the intravenous injection of a 10 per cent aqueous solution of calcium chloride

daily for three successive days, previous to operation, at the rate of 5 c.c. for each 60 kilograms of body-weight. The report shows that each of the 150 cases of obstructive jaundice received this treatment and not a single one of these suffered from hemorrhage. The results certainly seem to justify their conclusions that this pre-operative preparation was a great factor in reducing their mortality.

In reference to post-operative shock from biliary tract operations, we should bear in mind that the splanchnic nerves are very sensitive to traumatic influences, and the surgeon who handles the peritoneum and organs of the upper right quadrant gently and with the least trauma possible is the surgeon who sends his patient back to his or her room with the least shock.

Associated Diseases in Other Organs.—Much could be written concerning this phase of possible complications, but suffice it to say that biliary tract infections usually occur in people past 40 years of age, and it is at this age that hypertension, chronic myocarditis and nephritis are most often present. Painstaking study and proper pre-operative treatment is essential for good results.

Surgical Technique.—Considered in the light of the actual technical work, there is no field of surgery that can offer any greater variety of difficulties than there is found at times in the biliary tract. These difficulties are frequently congenital anomalies or pathological freaks, but it is my intention to devote this discussion to the broader view and deal with those factors in our surgical technique which might prevent the principal complications of biliary tract surgery, that is pneumonia, peritonitis, hemorrhage and shock.

In reference to pneumonia, I think it is probably the consensus of opinion that this complication occurs much less frequently when gas oxygen anaesthesia is employed. This is true because the patient is not chilled as with a prolonged ether anaesthesia. A very popular method of anaesthesia in these cases is nitrous oxide as a general anaesthetic and the employment of novocain locally to secure musculaar relaxation and prevent shock, as suggeseted by Dr. Crile in his Anoci Association Technique.

Peritonitis, hemorrhage and shock, when due to faulty technique, arise as a rule from the same cause. There are those cases, however, of extremely ill acute cholecystitis cases in which peritonitis has become so far advanced, and toxemia so pronounced that drainage is of no avail. But peritonitis in those cases where cholecystectomy or choledochotomy has been done is usually due to failure to drain at the time of operation, when it should have been done, or some condition arising, such as ligature on stump of the cystic duct giving away after operation. Serious hemorrhage occasionally arises from the same cause. Both of these complications should be guarded against by careful tying of the cystic duct and artery with two ligatures of chromic catgut or silk. Not infrequently a cystic duct will open up and drain bile several days after operation due to absorption of the ligature, and especially is this true in cases where there exists any obstruction to the common duct. A further precaution, then, should be painstaking care in assuring one's self of the patency of the common duct. Accidental injury of the portal vein or common duct should be mentioned as a possible complication of operations in this region. Adequate exposure, a dry field and careful dissection of the cystic duct are factors to be borne in mind to prevent this unhappy situation.

Professional Building.

THROMBOSIS OF THE LATERAL AND CAVERNOUS SINUSES COMPLICATING ACUTE MASTOIDITIS — REPORT OF TWO CASES, ONE INVOLVING THE CAVERNOUS SINUS AS WELL AS THE LATERAL SINUS.*

By E. G. GILL, M. D., F. A. C. S., Roanoke, Va.

The achievements recorded in aural surgery during the past fifty years have kept pace if not surpassed those of other surgical fields. While we are truly mindful and appreciative of these accomplishments, the fact remains that thrombosis of the lateral sinus following suppuration of the middle ear, either acute or chronic, constitutes a problem which at times taxes the skill and ingenuity of the most competent and experienced surgeon. During the past twenty-five years clinical data and monographs covering all phases of the subject have been written. These references are available to any one; consequently, a detailed study of the anatomy, pathology and symptomatology will not be given.

Symptoms

Emphasis should be given to the observations of many of the most experienced otologists

*Read before the American Triological Society, at Montreal, Canada, May 31, June 1-2, 1926.

in that there are no so-called typical symptoms. Each case is a law unto itself. Eves mentions the early appearance of the patient as being very deceptive. He looks well and feels well; later, he will invariably show the anxiety and depression accompanying septic infection.

Edema over the posterior portions of the mastoid, drained by the emissary vein, is seen as an early symptom in many cases. It is described by Tobey as the most constant and reliable symptom.

Temperature.—Elevation of temperature is one of the most common symptoms. Atkins reports elevation of temperature in eighty-seven and one-half per cent (87.5%) of a series of forty cases.

Pulse.—The pulse rate generally corresponds to the temperature curve.

Chills.—True chills are present in less than fifty per cent (50%) of all cases.

Blood Count.—Leucocytosis, a most common symptom, is present to some extent in most cases, an average being from 14,000 to 20,000.

Bacteriology.—The streptococcus occurs in the majority of cases, the streptococcus hemolyticus predominating in Eves' series of thirty-eight cases and Atkins' series of forty cases. Positive blood cultures are demonstrable in about fifty per cent (50%) of all cases.

Diagnosis

A diagnosis of sinus thrombosis having been definitely established, the internal jugular vein should be either ligated or resected before opening the sinus. Rott, in 1920, gave a very illuminating discussion concerning indications and contra-indications of jugular ligations in sinus thrombosis. With this brief mention of some of the important symptoms and signs of sinus thrombosis, the writer wishes to report two case histories which present some very interesting features, particularly Case 2.

Case 1.—M. P., male, child, age nine years, was referred May 16, 1920. Gave a history of having had a right simple mastoid operation performed in 1917. Has had an occasional discharge from his ear since the operation. Present illness began May 13, 1920, with severe pain in his ear, which was followed by a profuse discharge. Examination of right ear showed the canal was filled with thick foul-smelling pus and the posterior canal wall was sagging. Temperature was one hundred and four (104°), pulse ninety (90), and respiration twenty-five (25). A thorough, simple secondary mastoidectomy was performed May 17, 1920; a small area of the lateral sinus was exposed at the time of operation. The temperature, which previous to the operation was high and remittent, was not influenced by the operation. Culture from middle ear and mastoid showed pneumococcus type II. Blood count on admission, May 15, 1920, was—W. B. C. eleven thousand (11,000); polynuclears eighty per cent (80%).

On May 19, 1920, a diagnosis of sinus thrombosis was made and operation was advised. Internal jugular vein was ligated. The lateral sinus was exposed throughout the entire mastoid process. On opening it, a large clot was found and removed. Bleeding was obtained from each end of the sinus. Marked improvement followed the second operation until the seventh day, when severe pain began in the right hip, soon followed by pain in left hip. This became a most distressing symptom and resulted in the diagnosis of bilateral tuberculosis of the hip. The mastoid wound healed promptly and has remained so after a period of six years.

Case 2.—Child, age eleven years, referred by family physician October 6, 1925. Five days prior to admission right ear began to discharge thick pus. The discharge increased each day. There was pain in and behind ear and had been severe for five days. Past history was negative except that patient came from a neighborhood where there was an epidemic of typhoid fever. A relative in immediate vicinity recently died as a result of typhoid fever. On admission, temperature was one hundred and three (103°), pulse ninety-two (92), respiration twenty (20). General examination negative, except septic appearance. Examination of right ear showed a thick purulent discharge, marked sagging of canal, and entire mastoid tender. Smear of pus from right ear showed pneumococcus infection. Left ear was normal. Functional examination of right ear showed middle ear deafness, whisper two feet, and labyrinth normal. Left ear was normal. Blood count—W. B. C. was seventeen thousand (17,000), and polynuclears eighty-five per cent (85%).

Operation was advised, and a right simple mastoidectomy was performed. The bone was sclerosed. Pus was found in the mastoid tip and behind the knee of the sinus. Culture from middle ear and mastoid discharge was

sterile, probably due to faulty technique. Temperature was not influenced by operation. On the evening of the second day after the operation, patient complained of being chilly. This condition was followed by a rise in temperature and pulse rate. Internists examined patient and reported that clinical symptoms were suggestive of typhoid. Widal was made and report was para-typhoid. Blood was negative for malaria. Blood culture was negative. Blood count, October 8, 1926—W. B. C. was seventeen thousand seven hundred (17,700) and polynuclears eighty-seven per cent (87%). Condition was unchanged until the morning of the fourth day when patient complained of a chilly sensation accompanied by a rise in temperature and pulse rate. Blood count—W. B. C. was eleven thousand seven hundred (11,700) and polynuclear eighty-nine per cent (89%). In the presence of a positive Widal and clinical symptoms of typhoid (abdominal distention, bloody stools), a definite diagnosis of sinus thrombosis was made. The internal jugular and facial veins were ligated. Bone covering the sinus was very dense. After removing sinus plate from knee to bulb, there was no evidence of the sinus wall, only a tract fillled with pus of a most offensive odor. Culture was made and showed streptococcus mucosus capsulatus infection. Bleeding was not obtained from either end of sinus. A small metal catheter, shaped to conform to the torcular end of lateral sinus was introduced and suction applied; pus and particles of clot were evacuated. The same procedure was applied to the bulbar end, with like results. Bleeding was not obtained from either end. Temperature ranged for the four days between the first and second operation from ninety-nine and eight-tenths (99.8) to one hundred four and two-tenths (104.2). It was not influenced by the jugular ligation. Patient's condition progressed unfavorably to a fatal termination on October 16, 1925. Two days before death occurred exophthalmos of right eye was noted. This condition progressed rapidly, producing edema of lids, face and root of nose, conjunctival chemosis, dilatation of pupil and fixation of the eyeball. The fundus was examined, but no changes were observed. Autopsy was not permitted.

The post-operative medical treatment in this case was directed by an internist. It consisted chiefly of intravenous administration of normal saline and glucose solution and the usual treatment for typhoid fever. Mercurochrome was used twice.

Comment

Both cases are illustrations of depleted physical conditions, which are predisposing factors in sinus thrombosis following middle ear suppuration, Case 1 being a tuberculous patient and Case 2 a typhoid patient. The exophthalmos of the right eye in Case 2 was unquestionably due to a thrombosis of the cavernous sinus. Time is not given for a complete differential diagnosis of septic cavernous sinus thrombosis, such as from injuries, neoplastic growths, orbital cellulitis, tenonitis, periostitis, panophthalmitis, nasal accessory sinus infection, exophthalmic goiter and tumors of the orbit, optic nerve and of the lachrymal gland. Each of these conditions was carefully considered. The student who wishes further information of the differential diagnosis as well as the surgical anatomy, etiology, symptoms, diagnosis, prognosis, treatment and autopsy findings, will find these phases thoroughly discussed in theses by Dorland Smith, G. E. de Schweinitz, Warren S. Reese, H. G. Langworthy, J. Julian Chisolm, Shelton Watkins and others. Cavernous sinus thrombosis is a comparatively rare condition. Dorland Smith, in 1918, prepared a thesis on this subject, reporting five cases, and estimated that approximately three hundred cases are on record. From 50,000 surgical records of Johns Hopkins Hospital, from 1889 to 1919, only eight cases were found.

Conclusions

1. Whenever lateral sinus infection is suspected, complete blood examinations should be made daily. A sudden drop in the W. B. C. count with a rise of the polynuclears is significant. This was noted in Case 2.

2. Careful bacteriological studies should be made in every mastoid infection. A diagnosis of sinus infection, as in Case 2, would probably have been made sooner had the character of the infection been determined immediately following the mastoid operation.

3. Sinus thrombosis occurs as a complication of both acute and chronic middle ear suppuration.

4. Early symptoms are elevation of temperature, with or without chills, headaches over side affected, and edema and tenderness over area drained by mastoid emissary.

5. In suspected cases, when the laboratory

and clinical symptoms are not conclusive, the sinus in the entire mastoid process should be uncovered and carefully examined.

6. When any case of lateral sinus thrombosis develops orbital symptoms, such as exophthalmos, edeme of lids, face and root of nose, and conjunctival chemosis on the same side, septic thrombosis of the cavernous sinus should be suspected.

BIBLIOGRAPHY.

1. Eves, Curtis C.: The Diagnosis of Lateral Sinus Thrombosis. *Annals of Otology, Rhinology and Laryngology.* December, 1925.
2. Tobey, G. L.: Lateral Sinus Infection—Diagnosis, Treatment and Complications. Trans. Am. Laryn., Rhinol. and Otol. Soc., 1925. Quoted by Eves.
3. Atkins, Richard Travis: A Report of Forty Cases of Lateral Sinus Thrombosis. *New York State Journal of Medicine*, October, 1924
4. Rott, Otto M.: Concerning the Questions of Jugular Ligation in Sinus Thrombosis. *Annals Otology, Rhinology and Laryngology*, December, 1920.
5. Smith, Dorland: Cavernous Sinus Thrombosis —With Notes of Five Cases. *Archives of Ophthalmology*, Vol. xlvii, No. 5, 1918.
6. de Schweinitz, G. C.: Thrombosis of the Cavernous Sinus. *Atlantic Medical Journal.*
7. Reese, Warren S.: Cavernous Sinus Thrombosis, *Atlantic Medical Journal.*
8. Langworthy, H. G.: Anatomic Relations of the Cavernous Sinus to Other Structures, With Consideration of Various Pathologic Processes by Which It May Become Involved. *Anna's Otol., Rhinol. and Laryngol.* 1916, Vol. 25. Ibid. Amer. Encycl. of Ophth. 1913, 111, pp. 1794. Quoted by de Schweinitz.
9. Chisolm, J. Julian and Watkins, S. Shelton: Twelve Cases of Thrombosis of the Cavernous Sinus; From a Study of Fifty Thousand Surgical Histories in the Johns Hopkins Hospital. *Arch. of Surgery*, 1920, Vol. 1, No. 3, pp. 483-Quoted by de Schweinitz.

Gill Memorial Eye, Ear and Throat Hospital.

LOBAR PNEUMONIA IN INFANTS AND CHILDREN—A STATISTICAL STUDY OF 137 CASES TREATED IN HOSPITAL WARDS.*

By JAMES B. STONE, M. D., Richmond, Va.
Former Resident Physician on the Children's Medical Division, Bellevue Hospital, New York City.

This discussion is based on the study of 137 cases of lobar pneumonia treated in the wards of The Children's Medical Division of Bellevue Hospital, New York City. The series includes all the cases of lobar pneumonia admitted to this service during the year of 1922. This division of Bellevue Hospital cares for medical cases up to the age of 12 years. The patients are from poorer classes and the parents of a large number of them are foreigners who in many cases do not understand the English language sufficiently to give the most satisfactory histories. Four cases of empyema, who were admitted to the medical ward but were almost immediately transferred to the surgical service, are not included in the series.

In this study the detailed laboratory findings are not taken up, but instead an attempt is made to analyze the various physical findings and clinical aspects of the development, course and outcome of these 137 cases of lobar pneumonia.

In the early stages the diagnosis of lobar pneumonia in infants and children is not always easy to make, since the physical signs are often late in appearing.

The classical signs of consolidation with dullness and bronchial breathing were present in many of these cases, while in some they were not, and yet the character of the onset, the child's general appearance, the course of the temperature, the blood picture and X-ray findings were sufficient to determine the diagnosis. Usually at some time during the course of the illness local physical signs, varying from dullness with bronchial breathing to circumscribed areas of fine crepitant rales, made their appearance, though this at times was not until the temperature had fallen and resolution had begun.

The cases studied were in nearly every instance seen by two or more physicians who concurred in the diagnosis of lobar pneumonia. In some cases the diagnosis could not be made until after the lapse of several days, but when there was cough, sustained elevation of temperature (frequently followed by crisis), high blood count, and usually some chest signs which may have been only localized fine rales, the X-ray pictures when taken, or the subsequent course, corroborated the diagnosis of lobar pneumonia.

The ages of the cases in this group ranged from two weeks to eleven years. We have divided them arbitrarily into two groups, those under two years and those over two years. There were sixty-six cases under two years and seventy-one over two years.

It is interesting to note the seasonal incidence. By far the greater number in both age groups occurred during the spring months, and

*Read before the Richmond Academy of Medicine, March 9, 1926.

throughout the year the number of cases from the two groups corresponded fairly closely.

The distribution by months for the two groups combined was:

January	1	July	7
February	2	August	6
March	11	September	11
April	25	October	8
May	39	November	10
June	12	December	5

In regard to the character of the onset, in the group under two years the most frequent complaints were cough and fever. Next in order of frequency were vomiting (10 cases), diarrhoea (7 cases), "head-cold" (5 cases). Convulsions occurred in two instances.

In the group over two years, cough and fever were again the most frequent complaints. In order of frequency, the onset in this group was otherwise characterized by vomiting in 24 cases, pains in the chest in 17 cases, chill in 10 cases, loss of appetite in 8 cases, "head-cold" in 8 cases, delirium in 4 cases, convulsions in 3 cases, abdominal pain in 3 cases, diarrhoea in 1 case.

Other complaints were head-ache, rapid breathing, lethargy, sore throat, restlessness, insomnia, constipation, ear-ache, conjunctivitis, malaise, foul expectoration, joint-pains and nose-bleed.

Seven cases had developed within a period of two months after measles. One followed diphtheria, and one developed in a few days after operation for tonsils and adenoids.

In seven cases considered to be lobar pneumonia the lesion was never definitely localized.

Of the cases with involvement limited to one lobe, the order of frequency was left lower lobe (37), right upper lobe (30), right lower lobe (17), left upper lobe (11). There were no cases in which the right middle lobe was involved alone, but along with lesions elsewhere it was affected in 6 cases.

Where two lobes were affected the most frequent combination was right upper and right lower, 7 cases; next in order were right upper and left lower, 6 cases; and left lower with right lower, 5 cases. Other groupings occurred less frequently. There were 5 cases with three lobes involved.

Counting the cases with multiple lesions the order of frequency of involvement of different lobes was the same as in cases with only one lobe affected.

There was delay in appearance of local physical signs of pneumonia more frequently in the younger cases. Twelve of these were under two years, while among those over two years there were only six.

Of those developing new lesions subsequent to the initial ones, ten were under two years, and of these ten cases six died. Nine of those over two years developed additional lesions and none of these cases died in hospital, though two were taken home against advice of physicians in charge, before recovery, and the outcome of these is not known.

The highest temperature in the surviving cases was 106.2, and in those that died 106.5.

Of the cases under two years who remained in hospital throughout the febrile period the temperature came to normal by lysis in more than twice as many cases (24) as it did by crisis (11). On the other hand, among those over two years crisis was more frequent (29 cases) than lysis (25 cases). However, the lysis in many of these cases may have been due to complications which would have obscured a real pneumonia crisis as far as temperature was concerned. In the younger group whose temperature came down by lysis, there were 13 cases of acute ear infections, while in the corresponding older group there were 16 cases of ear infection, 1 acute mastoiditis, 1 pleurisy with effusion, 1 pyelitis, 1 acute tonsillitis. So, taking these complications into consideration, crisis probably occurred in both age groups more frequently than the above figures might indicate.

An attempt was made to have X-ray pictures made of all suspected pneumonias, but it sometimes happened that unavoidable circumstances prevented this being done. Pictures were made of 85 cases. Of these, the clinical diagnosis was corroborated in 33 cases under two years and in 46 cases over two years.

In three cases falling in each group and clinically diagnosed as pneumonia, X-ray failed to confirm the diagnosis. One of these was reported as "thickened pleura" and two as "broncho-pneumonia." However, from the clinical course in these cases the original diagnosis of lobar pneumonia was still held tenable.

Of the 137 cases studied, 61 were discharged as cured, 40 as improved, 13 unimproved. There were 23 deaths.

The unimproved group comprised those cases taken home against medical advice and those transferred to Willard Parker Hospital

because of the development of some contagious complication.

Further analysis of the mortalities shows only three of these cases to have been over two years old. One of them had developed an acute bilateral otitis media, and another had an acute nephritis.

Complications occurring in the fatal cases under two years of age were acute ear infection 13, septic meningitis 2, abscess of sacral region 1, impetigo 1, hordeleum 1.

Two of the infants died within 24 hours after admission to the hospital.

The greater number of the deaths occurred in April, May, September and October, corresponding to the greater number of cases in those months. There were no deaths in January, February, July or August. In none of the three older children that died was there involvement of more than one lobe. On the other hand, in the group under two years with fatal ending, two or more lobes were affected in 12 out of the 20 cases. Three of the five cases with involvement in three lobes died.

The highest temperature in the fatal cases was only a small fraction above the highest temperature in the cases that recovered.

A study of the character of the onset of the illness in the fatal cases shows that 6 of the 7 infants whose illness began with diarrhoea died, 5 of the 10 whose onset was with vomiting died, and the 2 cases that had convulsions at the onset both died.

Complications occurring in the cases not having a fatal outcome were, in order of frequency, in the infant group: acute ear infection 25, diphtheria 2, diphtheria carriers 4, furunculosis 1, impetigo 1, chalozion 1. In the older group, acute ear infection again heads the list with 21 cases, pleurisy with effusion occurred in 5, mastoiditis in 2, pyelitis in 1, acute cervical adenitis in 1, and measles in 1 case. Two cases in this group also were diphtheria carriers. Some of these children were transferred to another hospital while still ill, so that the ultimate outcome is not known.

Treatment

Most of these cases were treated either in a ward with windows open or out on a partially closed-in balcony. In cold weather these open air patients were clothed in special sleeping garments and heads protected with woolen hoods or caps. No hard and fast rule was applied in regard to keeping them in the open air, but rather the comfort of the child was taken as a guide. Some cases did not react well in the cold air, and when this happened they were brought into warmer surroundings. However, for the most part the cough and toxic symptoms were found to be less severe in the open air.

Very little internal medication was given. Tincture of digitalis was occasionally given in extremely ill cases with signs of failing circulation.

Simple cough mixtures were sometimes used if needed to secure rest.

Mustard plasters were used frequently on the chest and appeared to be very beneficial in relieving the cough and making the child more comfortable.

Special attention was given to the care of nose and throat, and nasal instillation of mentholated albolene or argyrol made in an effort to prevent ear infections.

Very ill cases were given daily enemata to prevent gaseous distention.

To reduce high temperature, reliance was put chiefly on forcing large quantities of fluids and the giving of frequent sponges with warm or tepid water, or alcohol, according to the age and vigor of the child.

During the early febrile period, the older cases were given liquid diet of half strength milk or orange albumin, and as soon as the toxic symptoms began to subside soft articles were added. In case of the infants also, the formulas were diluted according to the temperature, toxicity and state of the individual's digestive capacity.

Summary and Comment

1. To summarize briefly, a study has been made of 137 cases of lobar pneumonia admitted to hospital wards in a single year. These cases fell into two nearly equal groups on the basis of age—those under two years and those over two years.

2. The greatest seasonal incidence for the two groups was found to be in the Spring months.

3. Next to cough and fever, the most frequent complaint for which the cases were brought to hospital was vomiting in both age groups. Next to this, diarrhoea was most frequent in the infants, and pain in chest and chills in the older children.

4. The incidence of involvement of the different lobes in order of frequency was left

lower, right upper, right lower, left upper, right middle. There were no cases with middle lobe alone affected.

5. Delay in appearance of local physical signs of pneumonia was more frequent in the younger group.

6. Additional lesions developed subsequent to the initial ones more frequently in the younger group and the mortality was highest in these cases.

7. The maximum temperature of the fatal cases was only slightly higher than in those that recovered.

8. Temperature subsided more often by lysis in the infant group and by crisis in the older group.

9. X-ray confirmation of the diagnosis was obtained in 79 out of the 85 cases of whom X-ray pictures were taken.

10. The mortality among the infants was 30.8 per cent; among the older children 4.2 per cent; for the entire group 16.8 per cent.

11. The most frequent complication in each group was acute otitis media. The incidence was the greatest in the infant group and especially high in the fatal cases.

12. A comparison of the outcome with the character of the onset shows death to have occurred in 85 per cent of the infants whose illness began with diarrhoea, and in 50 per cent of those cases that began with vomiting. In the older group there was nothing striking about the onset in the fatal cases. None of those that were delirious at the onset died.

13. In the case of a large number of sick infants in a hospital ward the handicap of an insufficient number of nurses is nearly always a significant factor. This shortage makes it practically impossible for each child to be given the undivided attention that it should have in order for the best results to be obtained. The actual feeding and giving of water, from the mechanical standpoint, and other simple procedures calculated to make the child more comfortable, such as changing his position, seeing that he is kept dry, and in other ways relieving him of any mechanical source of discomfort, we consider to be of the utmost importance. The lack of facilities for this individual care must certainly have been one of the factors in the high mortality among the infants in this series. This is no indictment of those caring for these ill babies, but is an evil inherent with the institutional care of sick infants. However, after all, the advantages of hospital care for this class of patients must, no doubt, have far out-weighed the disadvantages when we compare the care that they received with what they would have received in their own homes.

Conclusions

1. Lobar pneumonia is of more frequent occurrence in infants than is ordinarily stated, as shown in this series, in which the clinical diagnosis was corroborated by X-ray findings.

2. The seasonal incidence and frequency of involvement of the various lobes in this series correspond to that usually stated in the textbooks.

3. High temperature is not an accurate index as to outcome to be expected.

4. Crisis is much more frequent in older children than in infants, though it also occurs with considerable frequency in the latter.

5. The mortality in infants with lobar pneumonia under two years of age is high, rendering the prognosis in these cases very grave. On the other hand, the low mortality among those over two years justifies a very favorable prognosis.

6. Gastro-intestinal disturbances at the onset in the infant group give a very serious aspect to these cases.

7. Ear infections are a frequent complication in both age groups, but of more significance in the infants. Though secondary to the respiratory condition, these focal infections probably in turn play a part in further lowering the resistance to the original infection.

8. In institutional treatment, among the factors contributing to the high mortality in the infant group, the lack of individual care probably plays an important part.

I am indebted to Dr. Herbert B. Wilcox, Director of the Children's Medical Division of Bellevue Hospital, of New York City, for permission to use the material on which this study was made.

2042 *Park Avenue.*

A PLEA FOR A CLOSER RELATIONSHIP BETWEEN PHYSICIAN AND PATIENT.*

By J. M. MILLER, M. D., Wytheville, Va.

I wish again to thank the Southwestern Virginia Medical Society for the great honor conferred upon me a year ago at Mountain Lake,

*President's Address before the Southwestern Virginia Medical Society, at Blacksburg, September 9 and 10, 1926.

when this body elected me its President. I did not know then, nor do I now, why you did it, but I assure you that I appreciate the honor none the less because of this.

In casting about for a subject suitable for the paper expected of me tonight, I found that this honor was not without obligation. I endeavored to find a subject that might, perhaps, prove of some interest to the public as well as to the profession, but whether or not I succeeded, you will have to be the judges after hearing this rather rambling and somewhat disconnected paper.

The title, as you have already heard is, "A Plea for a Closer Relationship between Physician and Patient." That physician and patient do not bear as close a relationship to each other today as they did a few years ago, is I think, readily apparent to all of us. As to why this change has come about, and who is to blame, we may differ. We physicians are probably more at fault in this matter than we realize. In fact, I fear we are the chief sinners. Suppose we consider some of the ways in which we differ from our predecessors, that would affect our relationship with our patients. This is an age of commercialism, and our profession has not altogether escaped its deteriorating touch, while appropriating some of its benefits. While a certain degree of commercialism is, of course, necessarry in the practice of medicine, as we, like other people, must have food and raiment, still, I believe there are some vocations of too high an order to be gauged chiefly by the dollar mark. The true conscientious teacher, the true consecrated preacher, and the true man-kind-loving physician belong to this class, and the further we advance into certain kinds of group, contract and other forms of commercialized or semi-commercialized practice, the further we depart from the high ideals of our predecessors, and the nearer we approach to state medicine with all of its attendant evils. If we continue the present trend, at the present rate, I fear it will not be many years until the physician will have become but a mere puppet in the hands of an autocratic state or federal bureau, a mere collector of cases for the state, instead of a practitioner.

Again, there has probably never been another period in the world's history, when the call for service to our fellow men has been so loud and insistent as it is today. The Rotary, Kiwanis and other civic organizations bear witness to this fact. Are we physicians, in the matter of service, emulating the example of the Great Physicians? Do a majority of our members respond cheerfully and ungrudgingly when called to the deserving poor? I am not now speaking of the "dead beat," nor of those who would not pay for services rendered if they could, but of those who would like to pay but cannot. For the habitual, chronic "dead beat," I have no sympathy at all—nothing but contempt. He is not worthy of the least consideration *per se*, but, unfortunately, he is often the nominal, supposed supporter of a helpless wife and children, to whose call for aid in time of sickness and distress we cannot turn a deaf ear, and be true to the traditions and ideals of our profession.

Again, we have lost favor with our patients by considering them more as cases than as individuals, by devoting all of our attention to the diseased condition, and none to the patient himself. A patient prefers to be known as Mr. Smith, or Mr. Jones, rather than as typhoid case No. 1, or as pneumonia case No. 2, and I do not think we can blame him. One of the best ways in the world to lose the hearty co-operation of a patient is to thoroughly convince him that we are more interested in his diseased condition than we are in him. Most sick people are morbid and over sensitive anyway, and soon tire of playing second fiddle even to a disease of which they are sole owner and proprietor, no matter how interesting it may be. Most patients flatter themselves into the belief, however much they may be mistaken, that they are worthy of much attention and consideration, aside from, and in addition to that received because of the disease to which they are host, and, unless we show them this consideration, they will lose interest and confidence in us, and we had better step down and out. The physician with much diplomacy and tact, other accomplishments being equal, will be far more successful than his fellow practitioner who is not equally endowed with these graces. Indeed, the man of mere mediocre ability, but possessing much tact, will usually far surpass the man of marked ability who is deficient in tact.

Again, we are supposed to safeguard the health interests of the public to the greatest possible degree. Are we doing this? What are we doing to weed out the undesirables and charlatans within our ranks? Do not most of us move on complacently "in the even tenor of our way," and allow these undesirables to fatten and grow arrogant on the proceeds derived

from a trusting and unsuspecting public? I venture the assertion that there is not a single physician in this room tonight who does not know one or more within our ranks, who should not be. Some of these may be thoroughly capable so far as medical qualifications are concerned, but absolutely unfit and undesirable because of moral or other delinquency. When these are finally exposed, perhaps by laymen whom they have victimized, does it not leave a bad taste in the mouth of the laity, so far as our whole profession is concerned? Would it not have been far better, both for us and the public, had we taken the initiative in their exposure? The same applies to the cults. If we do not in some way enlighten the public in regard to the erroneous, unwarranted and flamboyant claims of these impostors, who will? Can we afford to treat these matters with indifference and unconcern? Are we true to our clientele if we do this? Some classes may wither and die because of indifference towards them, while others will grow and prosper. All that these latter ask is to be let alone, not interfered with, and for the most part we are complying with their request. But, is it safe to continue this course? Can we afford to accept too great a handicap, because of the righteousness of our cause?

P. T. Barnum has been dead many years, but his dictum, that "the public likes to be humbugged," is still in force, and probably always will be. Many people never learn to take care of themselves, and since we have been accepted as the volunteer guardians of the nation in matters of health, shall we remain indifferent and unconcerned, while the people are being humbugged, or shall we become aggressive? If it were a matter of mere dollars, if dollars were the only pawn at stake in this game, then we could afford to remain complacent, but, unfortunately, health and even life itself are the pawns.

So much for some of the blame attachable to us in the estrangement of physician and patient; what of that traceable to the laity? The *real* cause here is as old as the history of mankind itself. It is that characteristic of the human race, which causes us to forsake the old and tried, for the new and untried. It is the same characteristic which caused the Israelites of old to forsake the true Jehovah, and make unto themselves graven images; the same trait that caused the Athenians to continually seek some new thing,—dissatisfaction with, and discarding of the proved and valuable, for the unproved and perhaps worthless. This spirit, I believe, is world wide, and to a certain extent to be commended, as there can be no real advancement in a policy of complacency and satisfaction; but, like many other things potentially good, may be easily abused and carried too far. St. Paul said, "Prove all things, and hold fast to that which is good." This is all which we of the medical profession ask. The great majority of our members are broad-minded enough, and unselfish enough, to wish success and God-speed to any man, of any school, who is master of a better technique than we. But we, alone, know the awful cost of temporizing in certain conditions, of fooling away the precious days, oftentimes only hours, in incipient disease, when the manner in which these days or hours are utilized spells either life or death to the patient.

So much for some of the causes that have brought about this changed relationship between physician and patient. What can be done to better this condition? We, as well as the laity, must reform along certain lines. We must see that not the slightest taint of organized commercialism sullies the unselfish soul of our profession. We can be, and ought to be, business men in a dignified sort of way, but the spirit of a Shylock must under no circumstances be allowed to enter. Again, we must be more considerate of our patients. We must convince by our manner that we are interested in them as well as in their diseased condition. I do not mean, of course, that we must pry into their private affairs, gossip with them, nor be "hail fellow, well met," with every Tom, Dick or Harry, who happens to be under our professional care, but I do mean that we must show ready sympathy and consideration.

Lastly, we must never compromise with quackery, no matter what form it may assume. It can subsist only on credulity and ignorance, and since others will not expose it, that duty falls on us.

So far as reform within the ranks of the laity is concerned, it is altogether a matter of education in regard to our profession, and since others are neither qualified nor willing to undertake it, this duty also devolves on us. We, of course, cannot change human nature, but we can sometimes change the viewpoint of an individual. People can be educated along a certain line, until a new perspective is established, whereby they will see things from a new angle, thus enabling them the better to

weigh and evaluate worth. In this way the public can be taught to intelligently compare, then choose between the true and the false. We have already too long been wrapped in a cloak of secrecy so far as our work and profession are concerned, but I am glad to see that even such a conservative organization as the American Medical Association is beginning to see the light, as is evidenced by the vigorous and persistent manner in which it is endeavoring to materially increase the circulation of HYGEIA. In my humble opinion, this is the most worth while thing, the most forward step taken by this Association in a long time. It is only a step further to the publication of specially prepared articles pertaining to our profession in the leading magazines of the country. You were kind enough to listen to me when I advocated this at Mountain Lake. It will eventually come; why not now?

The sooner the public knows us as we are, the sooner will the former cordial relationship that once existed between physician and patient be restored.

A STUDY OF THE CAUSES OF INDIGESTION BASED ON AN ANALYSIS OF 4,000 CONSECUTIVE CASES.*

By T. DEWEY DAVIS, M. D.
Associate in Medicine, Medical College of Va.,
and
DOUGLAS VANDERHOOF, M. D.,
Professor of Medicine, Medical College of Va.
Richmond, Va.

The term indigestion is used by the laity to cover many complaints. One patient will characterize his indigestion by a coating on his tongue, another states that he is dizzy when inquiry is made as to his specific symptom, while still another states that diarrhea is his prominent ailment. Any one attempting to classify the causes of such an indefinite symptom must be permitted considerable latitude, and the results obtained can only be considered as relative. However, with a large series of cases from which conclusions may be drawn it would seem that the information obtained is of distinct value. The four thousand consecutive cases forming the basis of this report appear adequate for this purpose. These include only those individuals whose chief complaint is indigestion, or in whose histories any of the following symptoms is a major complaint: anorexia, pyrosis, sour stomach, flatulence, nausea, vomiting and abdominal pain, the latter symptoms including only the mild grades, as acute pain would be considered "acute indigestion," and would be outside the scope of this report.

In health there are no sensations directing the attentions of an individual to his stomach or intestines. It has been repeatedly demonstrated during operations under local anesthesia that these organs may be handled, cut or cauterized without the appreciation of pain. However, Carlson has shown that heat and cold may be distinguished by the stomach mucosa, but only to a minor degree, and it can also be demonstrated that traction on the mesentery may so stretch its contained nerves that pain may arise. This may explain the dragging abdominal pains occasionally met with in the thin, visceroptotic type of individual.

Under abnormal circumstances any hollow viscus may give rise to pain, probably as a result of excessive muscular contraction. The agonies of the small boy who has eaten green apples, and the griping pain accompanying a severe diarrhea have this one common mechanical factor. To these may be added the pain occasionally associated with a spastic colon which is usually due to vagus hyperactivity, this in turn being due to reflex stimuli. The many other symptoms which make up the "indigestion" are chiefly reflex in origin, and the stimuli producing these may arise from a number of sources.

Mackenzie and others have shown that in visceral disease certain areas in the spinal cord become so irritable that stimuli arising from the periphery produce an exaggerated response. Thus the pain in acute appendicitis may invade the stomach area, giving rise to an exceedingly painful pylorospasm. Likewise, chronic disease of this organ as well as any other located within the abdominal cavity, and more rarely elsewhere in the body, may originate stimuli which invade the gastric area, producing the various symptoms so constantly referred to the stomach.

In 1915, one of us (V.) tabulated the causes of chronic indigestion based on an analysis of 1,000 cases. These cases and a second 1,000 were included in another report made in 1919. To these 2,000 cases we have added another 2,000, giving us the present series. Each patient has received thorough study and free use has been made of skillful X-ray examinations.

*Read before the Southside Virginia Medical Association, at Farmville, Va., June 8, 1926.

In addition, many diagnoses have been confirmed by operation. A complete classification of the diagnoses will be found in Table I.

CAUSES OF "CHRONIC INDIGESTION"

ANALYSIS OF FOUR THOUSAND CONSECUTIVE CASES.

		Cases	Per Cent
1.	Appendicitis	716	17.9
2.	Cholecystitis	390	9.7
3.	Peptic ulcer	381	9.5
4.	Neurosis	682	17.0
5.	Achylia gastrica	238	5.9
6.	Visceroptosis	157	3.9
7.	Cancer of stomach	70	1.7
8.	Peritoneal adhesions	93	2.3
9.	Migraine	51	1.3
10.	Cancer of intestines	29	0.7
11.	Chronic infectious diseases	58	1.4
	Affections of		
12.	Kidneys, heart and vessels	313	7.8
13.	Lungs	113	2.8
14.	Eyes	37	0.9
15.	Female pelvic organs	64	1.6
16.	Endocrine system	75	1.9
17.	Liver	27	0.7
18.	Central nervous system	31	0.8
19.	Ears and labyrinth	36	0.9
20.	Nose, throat and teeth	82	2.0
21.	Spondylitis	24	0.6
22.	Miscellaneous	250	6.2
23.	Diagnosis not made	83	2.1

Summarizing these diagnoses, it will be noted that appendicitis and neurosis make up about 35 per cent of the cases, or, in other words, one out of every three patients complaining of indigestion will be found to have one or the other of these conditions in about equal proportion. Cholecystitis and peptic ulcer each make up nearly 10 per cent of the cases. Achylia gastrica is the cause of the symptoms in about 6 per cent, while visceroptosis, cancer of the stomach and intestines and peritoneal adhesions account for 8.5 per cent. A little less than 20 per cent include those cases in whom the indigestion is a reflex disturbance from the kidneys, heart and blood vessels, lungs, liver, female pelvic organs, central nervous system, endocrine system, eyes, ears and labyrinth, and the nose, throat and teeth. It is interesting to note that diseases of the liver occurred as a cause of indigestion in only 0.7 per cent of the patients, which is in marked contrast to public opinion. Again, in 0.5 per cent of the cases, the symptoms were due to nerve root irritation caused by an arthritis of the spine. For various reasons the diagnosis was not made in 2 per cent of the cases, and in the remaining 6 per cent are included such conditions as pellagra, amebic dysentery, intestinal parasites, diverticulitis, cancer of pancreas and esophagus, retroperitoneal sarcoma, etc. Frequently in these patients more than one lesion might have been assigned as a cause, but in each case the most probable source of the patient's symptoms, in the author's discretion, is listed.

COMPARISON OF FIRST AND SECOND 2,000 CASES IN CONDITIONS SHOWING A MARKED CHANGE IN THE FIGURES.

	1st 2,000 (to April, 1917)	2nd 2,000 (April, 1917-July, 1923)
Appendicitis	436	280
Cholecystitis	224	166
Peptic Ulcer	206	175
Neurosis	258	424
Achylia gastrica	81	157
Cancer of stomach	46	24
Cancer of Intestines	21	8

It will be of interest to separate the first and second 2,000 cases and then compare the figures obtained. At a glance it will be apparent that there has been a marked decrease (64 per cent) in the incidence of appendicitis, with an increase in the neuroses of practically the same degree (60 per cent). These figures furnish food for thought, and a number of factors may be adduced in way of explanation. In the first place, an increasing number of patients presenting themselves for examination have had their appendices removed in the hope that the operation would relieve their symptoms. This would necessarily decrease the possibilities for the diagnosis. Then, too, with the increasing use of gastrointestinal X-ray studies, the presence or absence of a diseased appendix can be more definitely determined. Again, it must be realized that an irritability of the nerve supply to the stomach brought about by appendiceal pathology does not subside immediately after this organ is removed, but that time and after-treatment are necessary for cure, just as a spasmodic tic of the facial muscles will disappear only after prolonged efforts to overcome it. These post-operative cases add to the number of neuroses. Lastly, it should be remembered that some years ago the surgeons more frequently called in the internist for opinions in relatively simple operative cases than is the practice today.

In spite of these obvious explanations, we cannot escape a feeling of chagrin when we note the increasing percentage diagnosed neurosis in spite of constant improvement in our diagnostic equipment, and frequently we wonder if the diagnosis is only a cloak for our ignorance. Observation in many instances,

nevertheless, proves that our opinion is correct, which is very reassuring.

The decrease in the number of peptic ulcer and cholecystitis cases is undoubtedly due in large part to the more frequent and exact use of the Roentgen apparatus. Achylia gastrica has shown an increase of almost 100 per cent, which may be attributed to the use of the stomach tube more freely. It should be remembered, however, that many achlorhydrics have no digestive disturbances. The decrease in incidence of cancer of the stomach and intestines is best explained by the fact that in recent years these conditions are more generally recognized and are referred directly to the surgeon without consulting the internist.

The remaining conditions are of less importance and, in general, the incidence remains so nearly the same that further analysis is scarcely justified.

In conclusion, it may be stated that the most important thought engendered by this analysis is that every case of indigestion has a definite cause which may or may not be found even after the most painstaking investigation, and that cure cannot be effected unless the particular etiological factor is corrected.

608 *Professional Building.*

STERILITY.*

By C. J. ANDREWS, M. D., F. A. C. S., Norfolk, Va.

According to those who have studied statistics, about 10 per cent of women are unintentionally sterile. During the past few years the literature on this subject has been fairly prolific. It must be admitted that the problem has not been successfully settled, in that our treatment of it is not yet all that could be desired, although some very definite advances have been accomplished.

Any consideration of this subject must first involve the physiology of reproduction, at least in a very brief manner.

Living spermatozoa must reach not only the vaginal tract, but arrive safely in the tube. The secretions of the vaginal tract, being acid, are naturally antagonistic; that of the cervix, when normal, is neutral, or slightly alkaline, and is more friendly. When either of these secretions are abnormal the spermatozoa may be killed before they reach the uterus. The endometrium and mucous membrane of the tube must be in a functionally normal condition. The ovary must produce the ovum, which must be able to find its way into the tube, where it may become fertilized, and then find a suitable lodging in the uterus not too close to the cervix. Obviously there are a number of things which may happen to prevent the completion of this cycle. The basis of this paper is an analysis of the findings in forty-one cases recently observed by me.

The average age of the patients was 28 years, the oldest 37, and the youngest 18. The average duration of sterility for the whole series was 5½ years. The average age of those who have become pregnant was 5 years, two years being the shortest duration and 12 years the longest.

Every patient applying for relief of sterility should be subjected to a careful diagnostic study in addition to the gynecological examination. Any condition which affects the general health of the patient may be a factor in preventing conception.

Cervicitis was the most common lesion, being found in twenty-four cases. The uterus was small and undeveloped in six cases, and was found to be retrodisplaced in fourteen. Examination of three cases showed pelvic inflammation, probably of gonorrheal origin. Anteflexon was found in two. One patient had had both tubes removed. Dysmenorrhea was an outstanding symptom in fourteen cases; four of these gave a history of passing large clots with the period. Only two patients showed a positive Wassermann. Ten of these cases had a "D & C" previously done without benefit. Three of these patients showed no definite evidence of pathology.

The efficiency of the husband was tested in twenty-nine cases. Four of these either showed no spermatozoa, or very few, and poor motility. The husband was not examined in eleven cases, either because there was other obvious reason for the sterility, or the case was not followed to this point. No treatment was undertaken without this test of the husband's efficiency.

Focal infections other than gynecological were found in a number of these cases. These infections included teeth, tonsils, and urinary tract.

Three of my cases were of the one child variety.

The Rubin test, or carbon dioxide insufflation of the tubes, was done in twenty cases. The tubes were found to be open in fifteen cases, and closed in five. Twelve of the forty-one cases have so far become pregnant. Four

*Read before the Norfolk County Medical Society, April 26, 1926.

of these pregnancies occurred the month following the insufflation of the tubes. One of these had two months previously had the erosion of the cervix treated with the cautery; one had dilatation of the cervix one year before. One pregnancy followed several months after the insufflation. One pregnancy followed treatment of an infected cervix with the cautery and replacement of the uterus with support by a pessary. One patient who had been sterile for three years had a pregnancy to follow removal of the tonsils. Infection of the tonsils was the outstanding feature of this case. There was also a retrodisplacement of the uterus which did not interfere with pregnancy. Four pregnancies followed treatment of the cervix alone, or combined with advice as to general and sexual hygiene. One patient had been married twelve years without any conception. During this time her general health had been very poor. She had suffered pain in her right lower abdomen, for which the appendix was removed three years ago, without benefit. I found an infected cervix, a vaginal cyst in the wall of the vagina, and a stricture of the right ureter. The vaginal cyst was removed, the cervix treated with electric cautery, and the cervix dilated. The stricture was treated with the wax bulb. Pregnancy occurred several months after the treatment, when her general health had greatly improved. I do not know whether the pregnancy resulted from the dilatation of the cervix, treatment of the cervicitis, or the improved health following relief from the pain in the abdomen. Probably all three contributed to it. One pregnancy followed "D & C" with correction of displacement by round ligament suspension. These were done on account of other symptoms as well as sterility.

So much for those who became pregnant. The real problem relates to those who continue to be sterile. Several of these patients are still under treatment. In some, insufficient time has elapsed since their treatment to conclude that they have received no benefit, or that they will not become pregnant. In other words, I believe that there is a reasonable prospect that our results will be somewhat better than indicated by the present figures. We know the husband is at fault in four cases of the twenty-nine examined. I am aware of the fact that this is an unusually low percentage. Most observers believe that 50 per cent of sterility is due to the husband. My figures may be simply an accident, as the number examined is small. Possibly some of these spermatozoa which appear normal are not really fertile. I do not feel, however, that anywhere near 50 per cent of the patients which I have treated are sterile on account of the husbands.

Huhner's insemination test has been found to be very satisfactory for testing the spermatozoa. The fluid removed from the vault of the vagina and the internal os within two hours shows in the normal cases active spermatozoa. The technic of this is quite simple, but must be accurately performed. For instance, water is antagonistic to the spermatozoa; therefore, the pipettes must be sterilized in a hot air sterilizer, or dried in the flame. They must not be too hot when used. If spermatozoa are found, but not active, the presumption is that secretions of the vagina or cervix respectively have been sufficiently antagonistic to defeat the object. In this case a specimen by the rubber is resorted to.

The tubes were found to be closed in five cases. The tubes are not considered closed until tested more than one time. There is a possibility that when the gas is accidently turned on rather suddenly, a spasm of the isthmus of the tube may occlude it temporarily. If there is any question about the result, examination under anesthesia is more satisfactory.

Since Rubin first described his apparatus for the insufflation of the tubes, perhaps more articles have been published on its modification than any other one problem of sterility. Each one offers his apparatus as being simpler than the one devised by Rubin. The ordinary ear syringe, or bulb, is used by many. The principle advantage claimed for most of these simplified measures is the saving of cost. I have found the Rubin apparatus to be quite simple, and it has been entirely satisfactory for the purpose for which it is used. It certainly seems to have a definite advantage over the use of an ordinary bulb syringe. We can, I believe, distinguish more accurately the degree of pressure and the amount of gas introduced. The insufflation seems to have some therapeutic value when used by the Rubin method. I do not know whether this result has followed regularly the use of the bulb syringe. Insufflation of the tubes by any method is definitely contraindicated in any case of inflammation, and is obviously useless where other known causes for sterility exist.

Can anything be done for these closed tubes? Curtis reports success by inflating tubes with a Luer syringe from within the abdomen, after breaking up adhesions. He reports one pregnancy following this method. Of course the prospect of success here would depend upon the degree of obstruction and pelvic changes.

I have done this in one case so far without success. Robert T. Morris splits the tube and reports one pregnancy following this process. It is probably a mistake to assume that all these closed tubes are due to gonorrhea. We are familiar with the activity of the colon bacillus in the urinary tract. It seems reasonable to believe they could cause inflammation in the tubes as well. Of course, other ordinary bacteria are responsible in some cases.

Even though the gas cannot be made to pass through the tube, it would seem unwise to say to the patient that she could not become pregnant. So far no case of mine which did not admit the gas has become pregnant.

Of the twenty remaining cases, seven have a retrodisplaced uterus, thirteen being normal as to position. If active spermatozoa can be found in the cervix, it is not likely that this alone accounts for the sterility. The congestion secondary to the displacement is probably a factor. Certainly the percentage of displacements are greater in this group than in normal women.

The undeveloped uterus, with scant, irregular periods, suggests endocrine deficiency. Hirst recommends the use of electricity in these cases. These are possibly associated with inefficiently functioning ovaries, possibly without the discharge of ovum. It is to be remembered, however, that ovulation and menstruation are not one and the same thing. In other words, a patient may menstruate more or less regularly and not discharge any ovum.

Three cases showed no demonstrable pathology, or other known excuse. Considerable investigation has been made on animals which is suggestive as to an explanation in these cases. Many cases of cows and other animals have been treated by passing the hand through the rectum, grasping the ovary, and by manipulation rupturing the follicle, and pregnancy follows. One case has been reported in which this is believed to have been accomplished in a woman by bi-manual manipulation.

Diet seems to have a very definite influence on fertility in rats. Reynolds and Macomber showed that a diet low in fat soluble vitamin reduced fertility 50 per cent and that which is low in calcium to 14 per cent. Blair Bell says he has rendered many women fertile by the addition of calcium to the food. It is believed that diet affects fertility by its results on general health.

It has been shown that some animals may be sensitized to spermatozoa. By injecting spermatozoa into the veins of rabbits they may be rendered sterile for a time. It is possible that in human beings the female may be sensitized by absorption through the vaginal mucous membrane.

In no case did I find evidence of a tight cervix which would be likely to interfere with the progress of spermatozoa. It is possible that the occasional conception following "D & C" may be due to the improved condition of the endometrium and the cervix. So far I have had no help from alkaline douches or knee-chest position. If the secretions of the cervix and vagina are antagonistic, it probably means cervicitis. We know that certain bacteria cause an acid reaction. No doubt the acid reaction in the vagina is due to bacterial activity. Bacteria should not be found in the cervix. Infection of the cervix naturally causes an acid reaction which is antagonistic to spermatozoa. The only relief for this is appropriate treatment of the cervix. Most of these are successfully treated by the electric cautery. Some require curettement of the cervix, and occasionally one will only be relieved by the Sturmdorf resection of the cervix. Silver nitrate is sufficient in a few very mild cases.

Artificial insemination has been successful at times. The first successful intra-uterine insemination was done by J. Marion Sims in 1866. This apparently later fell into disuse, probably because successes were so very infrequent. At that time, however, the indications for insemination were not recognized. The ideal type of case for this is one in which the spermatozoa could not reach the fundus of the uterus alive, and where the tubes and other pelvic organs were normal. There is a small danger of infection, but otherwise the process is not difficult or dangerous.

Conclusions

The number of cases here considered is too small to draw definite conclusions, but the analysis of these cases would suggest that cervicitis is the most common pathology. Retrodisplacement, anteflexion and deficient develop-

ment are also common. The Rubin insufflation is a very useful diagnostic method in properly selected cases. It is comparatively safe. It has some therapeutic value.

Medical Arts Building.

UROLOGIC CONDITIONS IN INFANCY AND CHILDHOOD.*

By JOSEPH F. GEISINGER, M. D., Richmond, Va.

Urologic conditions appearing in the earlier years of life differ in few, if any, essential particulars, from those of the adult period. The pathologic phenomena of the two groups are more or less identical. The prognostic outlook for both is at least similar, and if the little patients could express themselves as adequately as their seniors it would doubtless be found that the symptomatology bears a like resemblance. Variations occur chiefly in the less fundamental relationships of etiology and incidence; in all other respects the urologic picture, speaking broadly, is not materially influenced by the consideration of age.

The artificial line which denies to one of these groups certain diagnostic and therapeutic procedures so helpful to the other is neither necessary nor reasonable. The hematurias, pyurias, and renal colics of infancy and childhood are entitled to as much consideration as those of maturity and old age. Precision of diagnosis as a guide to rational and effective treatment is possible here, as elsewhere, and assuredly no less desirable. The fact that it is accomplished with relative infrequency appears to be due partly to a lack of understanding of the scope of instrumentation possible in the child; and partly to an unfortunate presumption that the youthful sufferer will in time outgrow his ailments, assisted by a few simple symptom-relieving measures, admittedly inefficient in similar situations presenting in later life.

As a matter of fact, there is no inherent quality in youth endowing it with immunity to the ravages of malignancy, tuberculosis, deeply rooted infections, or extensive renal destruction from the back pressure effects of calculi or congenital obstructions. It is not common, as a mental habit, to associate these conditions with this age period; it is not rare, however, to encounter them when the urinary symptomatology of early life is approached with the same diligence which attends the adult. This approach is effected chiefly through the cystoscope.

* * *

The instrumental side of the problem has been hindered by some real difficulties which no longer exist; and by some sentimental objections which have yet to be overcome. Suitable instruments are now available, but the thought of bladder inspection, ureteral catheterization, and pyelography in infancy still seems shocking to many in the profession. Exploratory operations upon insecure diagnoses, or total disregard of essential therapeutics seem to be preferred to instrumentation. This is a natural protective impulse toward the tenderness of early life; it is a misplaced impulse, however, and actually denies to the child a form of protection upon which it is dependent with peculiar helplessness. Surely it is kinder to guard an infant from tuberculosis than from cystoscopy.

More particularly is this true when those familiar with urological instrumentation are prepared—as for some time they have been prepared—to demonstrate a technique that involves no more traumatism, and precipitates no more unpleasant sequelae than are liable to occur at any time in the ordinary adult cystoscopic clinic of the highest type. In the female child cystoscopy is possible practically from birth; in the male, for obvious reasons, the procedure is not so simple and cannot be undertaken at so early an age. However, cystoscopy has been performed repeatedly in boys of less than two years by Kretschmer, Hyman and others, and at a somewhat later age by various observers, including the writer.

The literature dealing with the urologic problems of childhood has been scattering and meager until quite recently. Within the past two or three years, however, several important articles have appeared and have apparently stimulated some general activity in this direction. The interest now being manifested in this subject by the pediatric societies and the pediatric divisions of the general societies is particularly encouraging. Urologists and pediatricians are beginning to exchange ideas on the same floor, and once this helpful cooperation is fully established the rest will follow as a matter of course.

Though he unhesitatingly urges the application of modern urologic diagnostic methods to infants and children when indicated, the writer does not wish to be mistaken for an advocate of indiscriminate cystoscopy in these little

---

*Read before the Walter Reed Medical Society, at Yorktown, Va., May 21, 1926.

people. Cystoscopy and ureter catheterization, under any circumstances and at any age, is a procedure entitled to considerable deliberation; and this is pointedly and particularly true in infancy and childhood. The indications must be impressive, and must be checked by a careful general physical examination. Unfortunately the symptomatology is often very poorly defined, owing to the inability of the patients to express themselves intelligibly. Roentgenography should always be done as a routine, to disclose calculi, calcifications, or unusual renal shadows, if present. Blood chemistry studies should be made along with a dye test of renal function. The urinalysis is of course of utmost importance. Simple catheterization of the bladder for residual urine, followed by cystography to define the contour of the viscus, and possibly also of patulous, dilated ureters, may prove very helpful.

The data assembled by these investigations may result in a sufficiently definite exclusion of certain serious surgical conditions to justify general medical treatment without cystoscopy. This is especially true when the case appears to be one of the common uncomplicated infections of the renal pelvis, most of which will clear up spontaneously, with alkalinization and forced fluids.

When the case is not as simple as this, when persistent pain suggests the likelihood of some obstruction, when hematuria appears as a warning of possible malignancy or tuberculosis, when pyuria persists over a long period in spite of systematic medical treatment, when tumors are palpable in the renal or supra-pubic areas,—then cystoscopy should unquestionably be undertaken, permitting inspection of the bladder, catheterization of the ureters, the detection of obstructions therein, the study of the separated urines and functions, and finally pyelography. All this can be done as specifically in the child as in the adult, usually, however, requiring general anesthesia. Pyelography, which is occasionally productive of sharp reactions even in adults, should not be done as a routine, but should be reserved for special indications.

If preliminary function studies disclose a low dye output and a high nitrogen retention, cystoscopy, in any case where it is contemplated, should be approached with great circumspection, and had better be deferred or abandoned. These patients tolerate manipulation very poorly and the result may be fatal. If the situation urgently requires radical attention, an exploratory operation may be preferable, as pointed out by Caulk. Under any other circumstances operation, though commonly done, is practically never justifiable without preliminary cystoscopy. Bugbee's autopsy studies have demonstrated that anomalies are not rare in infants; and the surgeon who undertakes to remove a kidney without having previously demonstrated the existence of a sound organ on the opposite side may find, too late, that the patient has no other.

* * *

Consideration of the nature and treatment of the various urologic conditions which are likely to be encountered during infancy and childhood would involve a review of the larger part of the entire field of urology, and is impracticable in a limited paper. It is helpful, however, to get some conception of the range of this pathology, even if the discussion has to be confined to bare tabulation.

It has been stated that the child is liable to all the urologic ailments of the adult, except those associated with cancer, pregnancy, and hypertrophy of the prostate. Certainly an inspection of the lists of diseases presenting in certain series of cases exhibited from time to time emphasizes the parallelism in the two age groups, already noted.

Though it has been occasionally stated to the contrary, congenital anomalies occupy a conspicuous place in the urologic picture of early life. In fact, they are definitely more numerous than in the adult, a variation easily explained by the fact that in a large proportion of the cases in which they appear they are incompatible with existence and prove fatal before the patient can reach maturity. In 117 autopsy cases exhibiting anomalies, Bugbee found that 101 died within the first year.

For practical purposes the anomalies might be conveniently, though roughly, separated into groups. Single kidneys, fused kidneys, and rudimentary kidneys are sufficiently common to establish soundly the principle that no radical operative procedure should be undertaken upon one side without previously demonstrating the condition upon the other side, if the functional situation permits preliminary cystoscopy. In this group belong also polycystic kidneys, horseshoe kidneys, and ectopic kidneys, which are occasionally found. In another group might be assembled the anomalies which are external and visible, so to speak,—exstrophy of the bladder, hypospadias, epispadias, and undescended testicle; these, with the exception

of balanitic hypospadias, are frankly surgical, and need no further discussion than to note that their management often requires great patience, nicety of judgment, and skill of technique. In a last, and extremely important group appear what might be described as the obstructive anomalies—strictures of the ureter, contractures of the vesical neck, hypertrophy of the verumontanum, and congenital valves of the urethra and ureter; these are relatively common and are responsible for the vast majority of the hydro-ureters, hydronephroses, and chronic vesical retentions of childhood; unless appropriately relieved by instrumentation or surgery, a steadily progressive and ultimately fatal pathology is inevitable. Along with these might be placed the retentions associated with spina bifida and other lesions of the central nervous system.

Hydronephrosis is a frequent cause of infant mortality, and should always be borne in mind in connection with the differentiation of upper abdominal tumors in children. Pyonephrosis may be the result of infection of a hydronephrosis, due to obstruction, or it may represent the terminal stage of a virulent renal infection without antecedent hydronephrosis. Numerous cases of pyonephrosis in children have been reported and have required nephrectomy; and the warning of Caulk to perform this operation in two stages when the child is very ill seems quite timely.

Tumors of the kidney are relatively frequent as compared with the same condition in later life. The common tumor in the adult is the well-known hypernephroma; the common tumor in the child is either a sarcoma or an embryoma. Whatever its nature, it is extremely malignant. The hematuria which frequently warns the adult is frequently absent in the child, owing to the relationship of the tumor to the kidney proper. As a result of this and the absence of other symptoms and the frequent disregard of the hematuria when it is present, most of these cases get to the surgeon after the tumor has reached great size. The only hope is radical surgery followed by radiation; or radiation alone if surgery cannot be undertaken. Under the best of circumstances the mortality is extremely high. At the Stuart Circle Hospital a small series of these cases have appeared; one child with a large embryoma underwent radical operation and is entirely well five years later; another was explored but was found inoperable; a section of tissue from a metastatic area in this case was reported by the pathologist to exhibit carcinoma, a most unusual finding. Tumors elsewhere in the urinary tract of children are quite rare but occasionally occur in the bladder; a few of these are benign fibromas; the great majority are sarcomas or myxomas and are so excessively malignant that any operative procedure short of the very questionable total cystectomy seems hardly worth considering; this appears to be the most hopeless of all the urological lesions in children.

Calculi are said by Hinman to be found but rarely within the urinary tract of infants and children, but by numerous other observers are stated to be common. The evidence that they are actually quite frequent seems overwhelming. Stones have been demonstrated in the fetus and at all the stages of infancy and childhood. The youngest case which has come under the observation of the writer was in a child of eleven months, who passed a calculus after a series of attacks of abdominal pain. According to Holt, small stones are frequently voided during the first two years of life; and it is now generally recognized that they must be considered among the important causes of the abdominal colics of childhood. The urinalysis is of great aid in the diagnosis. The X-ray is, of course, indispensable, but it is worthy of note that invisible uric acid stones are much commoner in children than in adults. The stones, when located, are usually in the kidney or the bladder,—very rarely in the ureter. Their management depends upon circumstances. A policy of watchful waiting is desirable if the stone is small and no serious infection is present; most of these stones will pass. Large stones in the kidney require operation; in the bladder a small lithotrite may be very successfully used if the stone is not so large or so hard as to make suprapubic cystotomy more appropriate.

Tuberculosis of the genital tract is rare, but of the kidney is not uncommon in children. The symptomatology may be very vague, or there may be marked vesical disturbance, with pus, blood, and tubercle bacilli in the urine. The necessity of ureter catheterization in such a situation is too obvious to require emphasis. If the condition is bilateral, surgery should not be attempted; if it is limited to one kidney, nephrectomy is indicated and offers a hopeful prognosis.

Diverticula of the bladder have appeared to be rare in children, but with the more extensive application of cystoscopy to this age

period, cases are reported with more and more frequency. In this condition cystography is of more specific aid in the diagnosis than cystoscopy. These cases are rarely, if ever, seen until infection of the residual urine has precipitated a situation, often acute and often mistaken for pyelitis. Palliative measures are of no avail. The only effective treatment is radical removal of the sac. The ureter may be involved and section with reimplantation may be necessary. If gross infection and a large residual urine are present, it may be necessary to precede the operation with preliminary drainage of the bladder through an indwelling catheter. In this connection it may be recalled that, in order to prevent possible suppression of urine and uremia, gradual decompression of a chronically distended bladder is as important in a child as it is in an adult.

Vulvo-vaginitis of gonorrheal origin is very common in children in some localities and may be accompanied by urethritis and cystitis. Effective treatment is often difficult and sometimes taxes the patience of the doctor and the endurance of the child. Gonorrheal urethritis in the male infant occurs occasionally and may be followed by stricture. The writer has encountered several cases of vulvo-vaginitis in infants and children, and one case of an almost complete gonorrheal stricture, with total retention of urine, in a boy of four years. A non-specific type of urethritis has also been described and is said to be due to uncleanliness and accumulation of secretions; it is more common in girls, but is not infrequently seen in boys.

* * *

The incidence of renal infection, commonly described as pyelitis, is so great in infancy and childhood, and this condition so easily outstrips all others in relative frequency, that it has been reserved for final and more detailed consideration. Though a simple pyelitis may exist, the lesion is more generally a pyelonephritis. It is much more common in girls than in boys; it may be, as currently supposed, often an ascending infection, but it is doubtless as often of hematogenous origin, associated with some distant focus, the location of which is of primary importance in the treatment. The organism is generally the colon bacillus, though coccal infections are occasionally reported. Fever and malnutrition may be the only symptoms and, if urinalysis is neglected, as frequently happens, the patient may be treated for malaria, typhoid fever, or other conditions. Often there are localized pain and tenderness in one or both renal areas, and when these are associated with pyuria and fever the diagnosis is clear. Many cases appear in the course of enteritis and other conditions in childhood; they usually subside promptly when the primary condition is relieved. Many other cases are independent of such associations and run their own course; the great majority of these will either promptly or ultimately yield to a simple line of treatment consisting of eradication of foci, the administration of large quantities of water, and thorough alkalinization of the urine.

In a certain percentage of cases this result will not be obtained, even after prolonged systematic treatment. The patient will continue ill, or the acute symptoms will subside but the pyuria persist, or both symptoms and pyuria will disappear for the time being, but will recur subsequently at irregular intervals. In this type of case cystoscopy should be performed.

The writer is not ignorant of the objections, in certain quarters, to this procedure. Some of the observers who deprecate the instrumental treatment of pyelitis, especially in infancy and childhood, are doing important work in urology and their opinions are entitled to great respect. But the writer is compelled to be guided by his own experience, especially when it is supported by the greater experience of such men at Kretschmer, of Chicago; Bugbee and Hyman, of New York; Livermore, of Memphis; Cecil, of Los Angeles; Stevens, of San Francisco; Hinman, of San Francisco, and others. All these men advocate cystoscopy, dilatation of ureters, and lavage of the renal pelves in this type of case in the infant or child, and report striking and prompt results when all other measures have signally failed. Finally, Young, of Baltimore, in his recently published text has recognized this work, stating that "in the presence of grave sepsis ureter catheterization and pelvic lavage may be highly advisable, even at an early age;" and, again, "with the demonstration of infection in one or both kidneys (of the child) pelvic lavage may often be carried out most satisfactorily and sterilization often obtained much more rapidly than by the methods of internal medication usually employed."

In the hands of the writer, therefore, the rebellious case of pyelitis, acute or chronic, which has successfully resisted the ordinary

treatment, goes under cystoscopy, regardless of age. If the infection is dependent upon some complicating factor, such as obstruction in the ureter or urethra, this fact, otherwise hidden, will be disclosed in the course of the examination, and may lead into a new line of attack of vital importance. If, on the other hand, the case is a simple pyelitis, without complications, one or more catheterizations of the ureters, accompanied by lavage of the renal pelves with silver nitrate, will not infrequently produce a prompt cure and spare the patient many months of disability and possibly ultimate serious damage to a kidney.

Summary and Conclusions

1. The parallelism in urologic pathology, as between the child and the adult, suggests a like parallelism in the essential details of diagnosis and treatment.

2. With modern instruments, complete cystoscopic exploration of the urinary tract can be accomplished with facility and without trauma in female children of all ages, and in males except within the first few months of life.

3. Cystoscopy in children should not be undertaken indiscriminately. When definite indication exists, however, it should be unhesitatingly employed if the renal function is at a satisfactory level.

4. Many of the urologic problems of childhood are dependent upon conditions which can be disclosed only by cystoscopy; without this disclosure, treatment will often be inefficient and sometimes totally misdirected.

5. The customary exploratory operation upon the urinary tract of children should now yield to a well-planned surgical procedure, directed by preliminary cystoscopy, as in the adult.

6. The frequency of congenital anomalies of the kidneys makes it of fundamental importance to demonstrate the presence of a sound organ upon one side before performing nephrectomy upon the other.

7. In the treatment of rebellious types of pyelitis, which have failed to yield to other measures, dilatation of the ureters and lavage of the renal pelves has been shown beyond question to be of striking value and should be more commonly employed.

Stuart Circle Hospital.

MODERN PROGRESS IN OUR KNOWLEDGE OF THE ETIOLOGY OF DISEASES.*

By EUGENE L. LOWENBERG, M. D., Norfolk, Va.

So voluminous is the medical literature of today and so filled with important links in our knowledge of diseases, that though one works faithfully to keep oneself well informed, there must be times when our knowledge of the many advances necessarily becomes hazy, and there occurs the need to take inventory of the knowledge at hand. Such will be my endeavor in this paper, limiting myself to the more recent literature on the etiology of the more common disorders of our time.

During and since the days of Pasteur, in the middle and latter half of the nineteenth century, there followed in rapid succession the discovery of the etiology of many important diseases of an infectious nature: of typhoid fever, erysipelas, diphtheria, pneumonia, epidemic cerebrospinal meningitis, gonococcus infection, amebic and bacillary dysentery, cholera, bubonic plague, tetanus, anthrax, leprosy, tuberculosis, actinomycosis, malaria, tape-worm, hook-worm, sprue, botulism, infantile paralysis and many rarer conditions. Diseases of man were shown to be caused by many types of viruses, by bacteria, by fungi, by protozoa (spirochetes and trypanosomes), by flukes, by worms. Brilliant workers pointed out the endless variety of manners in which these diseases were transmitted to man,—typhoid by contaminated water and milk; typhus by the body louse; dengue, filaria, malaria by mosquitoes; intestinal parasites and botulism by pork and other meat foods; hydrophobia by the bite of a mad dog. Even birds, mice, ticks, guinea-pigs and bed bugs were incriminated as harborers of germs pathogenic for man. An enviable heritage was left us and the way to continued progress pointed out. And though a little slow in getting headway, the twentieth century has already demonstrated to be of virus causation, and isolated the organism of the following conditions: typhus fever, influenza, whooping cough, scarlet fever, measles, trypanosomiasis, yellow fever, syphilis, infections jaundice, milk sickness, and tularemia. In this country the comparatively recent discovery of the etiology of whooping cough, influenza, scarlet fever, measles and tularemia particularly interest us.

*Read before the Norfolk County Medical Society, June 21, 1926.

In 1906, Bodet and Genou reported the isolation of the causative organism of whooping cough—a small ovoid hemolytic bacillus, cultivated only on blood agar, agglutinable by whooping cough immunization serum.

In 1892, Pfeiffer isolated a bacillus which he believed to be the cause of influenza, but subsequent investigations failed to corroborate his findings. In 1920, Olitsky and Gates, of the Rockefeller Institute, cultivated from the nasopharyngeal washings of influenza patients a filter passing gram-negative micro-organism which they called the bacterium pneumosintes. In the recurrence of the epidemic in 1923, Olitsky and McCartney were able to confirm these findings, cultivating the organism from the nasopharyngeal washings on anaerobic blood agar plates, and reproducing the disease in rabbits by intratracheal injections. Agglutinins against this bacterium have been demonstrated in patients who have recovered from influenza attacks.

In 1918, the Surgeon General of the United State Army sent out a commission to investigate an unfamiliar form of interstitial and broncho-pneumonia complicating measles among the United States Troops. The commission proved the specific organism in most cases to be a specific strain of streptococcus hemolyticus. Dochez and other members of this commission, stimulated by these findings, began to work out a method of differentiation of the biological types of streptococcus hemolyticus. In this work, Dochez showed that the type of hemolytic streptococcus found in the throats of scarlet fever patients is specific, and succeeded in 1921 in reproducing a disease simulating scarlet fever in a dog, and later in guinea-pigs and hogs. But animals at best proved to be unsatisfactory for the production of conditions that could be definitely identified as scarlet fever. Numerous other workers furnished contributory evidence of the relation of streptococcus hemolyticus to scarlet fever, and even the production of active and passive immunity was reported, but it remained for Doctors Gladys and George Dick to settle the matter. In 1923, Gladys and George Dick reported the isolation of a specific strain of streptococcus hemolyticus from a lesion on the finger of a scarlet fever patient and the experimental reproduction of the disease in human volunteers. A nurse who was taking care of a scarlet fever patient came down with the disease herself. Two days before the onset of the attack she had noticed a sore on one of her fingers, and on the second day of the disease, when the rash was intense, a culture was taken of the pus from this finger. Five human volunteers were inoculated by swabbing their throats with a four day old culture of the hemolytic streptococcus isolated from this pus. Of the five volunteers, one developed mild, another typical scarlet fever. With rapid strides the Dicks soon showed that the streptococcus hemolyticus of scarlet fever produced an exotoxin, that this toxin could be used to determine susceptibility to the disease in the manner of the Shick test for diphtheria, that potent anti-sera could be produced in animals for human use; and carrying their conceptions still further, they pointed out how their susceptibility test could be used to aid in the differential diagnosis of scarlet fever and to identify the specific strain of hemolytic streptococcus in the future.

And now excellent evidence is brought forward that still another type of streptococcus is the cause of measles. Doctors Ferry and Fisher, of the Parke Davis Laboratories, announce in a current issue of the *Journal of the American Medical Association* that they have isolated a small, gram-positive, aerobic, green producing streptococcus from the blood of patients in the early stages of the measles; that a typical measles rash can be produced in rabbits by the intracutaneous injection of live cultures of this organism, that the streptococcus produced a soluble toxin which could be used similar to the Dick and Schick test to determine susceptibility and to produce immune serum in horses and rabbits.

Thus was the streptococcus, long assailed as the cause of many and varied diseases, convicted as the etiological virus of two most important diseases of man. Long suspected, the difficulty has always been the lack of methods of differentiation of the multitudinous strains of this group of micro-organisms. Investigators have for years obtained streptococci from cases of scarlet fever, measles, rheumatic fever and many other diseases, but the failure to always recover or isolate the same strain on the part of a given investigator, or the recovery of different strains by different workers, has given conflicting reports and beclouded the field. Though the Dicks have shown how, in a round-about way, the streptococcus of scar-

let fever can be identified, adequate methods are still wanting, neither agglutination reactions, cultivation characteristics, nor any other usual method, proving of value in this group. It is possible that as soon as adequate means of differentiation of the strains is forth-coming, the virus, long thought to be a streptococcus, of acute articular rheumatism, endocarditis and chorea, shall no longer be so evasive, and the work of Poynton and Payne, in 1900, who isolated the diplococcus rheumaticus, or of Rosenow, who has successfully cultivated a specific strain of streptococci from joints, the tonsils and the blood of rheumatic fever patients and reproduced the disease in animals, shall be substantiated.

It is noteworthy that there exists quite a list of diseases which we can demonstrate to be due to an infectious virus, and yet have been unable to isolate the organism, namely, smallpox, chicken-pox, mumps, dengue, hydrophobia, encephalitis-lethargica, coryza, gangrene of the lung, and Rocky Mountain Spotted Fever. Kermogant, of the Pasteur Institute, claims to have isolated a spirochete as the cause of mumps. Various writers have isolated spirochetes from cases of gangrene of the lung.

That man could suffer clinical disease due to errors of metabolism, such as gout, obesity, diabetes insipidus, or due to malfunction of the endocrine glands, such as tetany, acromegaly, cretinism, myxedema, hyperthyroidism, or sensitization diseases, such as hay fever and asthma, was disclosed by earlier workers. The twentieth century has added a notable group, the deficiency diseases—beri-beri, rickets, possibly pellagra, tetany, simple goitre. The place of rickets in this group has been definitely established by the recent work showing that sunlight prevents or cures, that cod-liver oil and irradiated foodstuffs have similar properties.

The emphasis of focal infection is a definite contribution of our time to the etiology of diseases.

In diseases of the gastro-intestinal tract, such as peptic ulcer, ulcerative colitis, cholecystitis, appendicitis, pancreatitis, cirrhosis and other diseases of the liver; of the blood forming organs, such as pernicious anemia, leukemia, Hodgkin's disease, hemolytic jaundice, purpura, hemophilia; of the cardio-vascular system, such as valvular heart disease, disturbances of rhythm of heart, angina pectoris, arteriosclerosis, thrombo-angiitis obliterans, hypertension; of the genito-urinary system, such as the nephritides and nephrolithiasis; of the ductless glands, such as toxic goitre; of the nervous system, such as spastic paralysis, tic douloureux, paralysis agitans, Raynaud's disease, epilepsy; of the locomotor system, such as arthritis deformans; of the major insanities,—we are still much in the dark. Most recent literature tends to implicate a gram positive diplococcus in ulcerative colitis (Mayo Clinic), the Monilia Psilosis of sprue as the cause of pernicious anemia and possibly pellagra; guanidin, a catabolic by-product normally excreted in the urine, as the cause of high blood pressure.

In 1911, McCoy and Chapin described a "plague-like" disease of rodents which they observed as a fatal epidemic among the ground squirrels of Tulare County, California; and reported the isolation of the organism, a bacillus which they named Tularense, after the so named infested county. These workers also demonstrated the presence of agglutinins against the bacillus in the blood of laboratory workers extensively engaged in handling or dissecting infected rabbits. Thus was produced indirect evidence that the bacillus Tularense could infect humans. And, in 1920, Dr. Edward Francis, of the United States Health Service, described seven human cases and seventeen cases in jack-rabbits, in all of which the bacterium Tularense was isolated. This new disease in man has been shown to be transmitted by the bite of an infected blood sucking tick, the Chrysops discalis, or by the handling of infected rodents, as in the case of market men, cooks, hunters, laboratory workers. About 300 cases have been reported in Utah, Idaho, Montana, Colorado, Wyoming, New Mexico, Ohio, North Carolina, Virginia and West Virginia. Francis states that this is the only recent disease that has been elucidated from beginning to end by American investigators alone.

I have purposely left mention of cancer to the last. We have been accustomed to lament that nothing is known of the etiology of this dreaded disease. Without wishing to appear over-optimistic, I cannot help but feel that the discovery of its cause is not far off. Strong evidence has been produced to show cancer is a virus-caused disease. I shall hastily sketch some of the more important data at hand.

That epitheliomas may be produced in rats by painting a skin area with tar two to three

times a week is well-known. Until recent years tumors have been transferable only by inoculating living tumor cells of a member of a species to another member of same species, as mouse to mouse, rat to rat. In 1911, Peyton Rous described a sarcoma of fowl which differs from tumors formerly described in one very important respect, namely, that it can be transferred from chicken to chicken by inoculating with dead tumor cells or with a cell free Berkefeld filtrate. In 1912 he added an osteochondrosarcoma, and in 1914 a spindle cell sarcoma to the list, so that there are now three well described tumors, transmissible by inoculation with their cell free filtrates, all sarcomata, all growths of hens. Strong evidence was thus produced in favor of a filterable virus as the cause of fowl sarcomata. In the *Lancet*, July, 1925, W. E. Gye, of the Medical Research Council, published work which led him to conclude that cancer is a specific disease caused by a virus that probably lives and multiplies in the cell and provokes the cell to continued multiplication. Under experimental conditions, the virus alone is ineffective: a second specific factor is needed, a factor obtained from tumor extracts, that ruptures the cell defences and enables the virus to infect. Under natural conditions, chronic irritation of tissues sets up this state under which infection can occur.

Gye worked with the Rous chicken sarcoma No. 1. The tumor-bearing animal is killed with chloroform, the carcass soaked in lysol and pieces of the tumor excised with sterile technique. The tumor tissue is minced with sharp scissors, and the mince is then rubbed with sterile sand in a mortar to break up the cells. Saline solution is added to the mass in proportion of 100 c.c. to about 1 gram of tumor and, after mixing, the suspension is filtered through layers of paper pulp and sand in order to remove the sand and tissue remnants. The filtrate thus obtained, a faintly yellow transparent fluid, is refiltered through special candle filters, and 1 c.c. of the final filtrate injected into the pectoral muscle of a chicken. By 14 days there is a palpable tumor which almost always metastasizes and kills the chicken in 28 days. Gye then produced primary cultures of tumor cells by placing a fragment of tumor tissue in a tube of modified Hartman's broth and produced tumors by inoculation with supernatant fluid from these cultures. By various modifications cultures could be obtained that retained their infectivity as long as 7 days, and potent subcultures up to the 8th subculture were obtained.

The first outstanding feature of Gye's work was that the washed sediment obtained by centrifuging a primary culture failed to produce a tumor on inoculation. The supernatant fluid of this centrifuged culture is likewise innocuous, but when this innocuous fluid is added to the sediment, infectivity is restored. Thus two factors were demonstrated, one probably a virus thrown down by centrifuging, the other a chemical substance uninfluenced by centrifuging. Candle filtrates were likewise shown to be more uniformly infective when this chemical substance (supernatant fluid of a centrifuged tumor cell broth culture) was added.

The second outstanding feature was the production of sarcoma in chickens by the virus of *mammalian* tumors. Gye studied in particular four standard tumors of mammals, a spindle cell sarcoma of mouse, the Jensen rat sarcoma, a carcinoma of mouse and a rat carcinoma. He was able again to obtain a virus or at least infectivity in the filtrates and cultures and, further, was able to do what has hitherto been unsuccessful and a stumbling block to the virus theory, produce chicken sarcoma by inoculating with rat or mouse tumor virus. Again, however, this was accomplished only by adding to the virus (tumor filtrate or culture) the chemical factor of chicken sarcoma—the supernatant fluid of centrifuged chicken sarcoma culture.

The reports to date include work with three human tumors. Cultures of the first were found contaminated; cultures of the second were inoculated into chicken but did not produce a tumor, while the third experiment was successful—inoculation of a chicken with human breast tumor culture plus the chemical factor produced a chicken sarcoma.

Gye thus has shown that the Rous No. 1 chicken sarcoma is caused by a virus capable of producing a tumor only in the presence of a chemical or specific factor: that this factor is found in the supernatant (and thus virus free) fluid of centrifuged chicken tumor cultures; that cultures of a mouse carcinoma, a rat carcinoma, a rat sarcoma, and a human breast tumor when inoculated with this factor into chicks will produce a chicken sarcoma. The common factor seems certainly to be a

virus. The nature of the supposed chemical factor is being investigated.

Gye feels that attempts to stain and see the virus in his hands have failed. Certain "granules" which can be stained in films made from tumor cell cultures, he does not believe to be the virus.

Before leaving this subject, it should be added that much evidence has accumulated in the past year which supports the opinion of those who believe that cancer is infectious. London and McCormack, of Toronto, and Scott, of Butte, Montana, working together and individually, are led to the belief that carcinoma is a specific infections disease due to a pleomorphic micro-organism which was originally isolated by Glover and Young. They have studied the Rous chicken sarcoma according to the technique of Gye and by modifications, and report the isolation and culture of a morphologically similar Gram positive pleomorphic organism from the fresh tissue of Rous chicken sarcoma No. 1, from human carcinoma, rat carcinoma, human sarcoma and rat sarcoma, and from the blood of the hosts of these malignant growths. They believe the organism in one of its phases is filtrable and that the filtrable organism described by Gye is the filtrable phase of the same pleomorphic organism they isolated and cultured.

The data for this paper has been taken almost entirely from Tice's Practice of Medicine, the International Medical Digest, the *Journal of the American Medical Association*, the *London Lancet*, and Osler's Practice of Medicine.

303 *Medical Arts Building.*

DIABETES MELLITUS—DIETETIC AND INSULIN TREATMENT.*

By WILBUR M. BOWMAN, M. D., Petersburg, Va.

It is not my purpose to go into the history and diagnosis of this important disease. Time is short and the phase of my treatise on this subject probably longer than the law allows. The relative increase in the number of diabetics in recent years has brought more of those patients seeking modern treatment from physicians. I was impressed, however, to find that many doctors do not attempt to treat these cases, but refer them elsewhere to those whom they consider more capable and are familiar with the modern knowledge of an apparently complex and intricate treatment. With simplified methods and practical books for both physician and patient now on the market, modern treatment of diabetes has come to be a source of "pleasure" (if you can call it such), rather than a tedious brain-racking puzzle.

Hospital and Home Patients

Hospital patients are obviously easier to treat, especially in institutions employing a dietitian trained in the knowledge of food calories, weights, and measures. There is relatively little for the physician to do in such a case except an occasional computation which he can accomplish in 10 or 15 minutes. I am referring here to the average case without complications. As for the home patient, the obstacles are harder to meet and the case does not progress as rapidly or as smoothly as the more fortunate ones who are able to take advantage of the hospital. However, in a practical but scientific way, there is no doubt but that each physician can handle the average case himself, be it at home or at the hospital.

Basal Metabolic Diet

The first requirement in the treatment of diabetes mellitus is to determine the basal metabolic diet. This is a diet containing the daily number of calories necessary to maintain the body requirements while the patient is at rest in bed. At times you may find that it is not necessary to do this on account of the short duration or mildness of the disease. In such cases all that may be required is to put the patient on a strict diet (which Joslin calls "foods without sugar") as follows: Meats, poultry, game, fish, clear soups, gelatine, eggs, butter, olive oil, coffee, tea, and cracked cocoa. If, however, the glycosuria continues, a calculated diet will be necessary. A diet based on weight alone, as was formerly done, is inaccurate. A more scientific and correct way is on the basis of the surface area of the body. A pamphlet recently sent out by Eli Lilly and Company contains a diabetic chart from which the daily caloric requirement may thus be determined. To do so, you must know the weight, height, age, and sex of the patient. From the weight and height you determine the surface area. From the surface area, age, and sex, the total calories per day or the basal maintenance diet is obtained. An addition of 10 per cent is made for energy required during digestion. For diabetics not in bed but allowed a limited amount of walking, 30 per cent additional calories are

*Read before the Dinwiddie County Medical Society, at Petersburg, Va., June 17, 1926.

added. In more active exercise or work, 40 to 50 per cent may be added.

Caloric Food Values

It is perhaps needless to say that the three elements of food necessary to furnish heat and energy to the body are carbohydrates, fats, and proteins. The caloric equivalent of each may be given as follows:

1 gram protein yields 4 calories;

1 gram carbohydrate yields 4 calories;

1 gram fat yields 9.3 calories, but for practical purposes we only figure on 9.

1 gram alcohol yields 7 calories. I state this because you will find its use in certain diabetic cases of great importance as a source of food.

Available Glucose

We know that in diabetes mellitus the lack of active insulin from the islands of Langerhans cripples the individual in storing and oxidizing glucose adequately. That is, the available glucose present in a meal cannot be stored as glycogen in the liver and other parts of the body nor can it be oxidized to furnish heat and energy to the individual. The importance of a well proportioned diet is obvious therefore. The body must not be supplied with any more glucose than can be utilized. The available glucose means all the glucose derived from fats, carbohydrates, and proteins. One hundred per cent of the carbohydrate is converted into glucose as well as 58 per cent of the protein and 10 per cent of the fat.

Keto-Antiketogenic Ratio

Available glucose is also referred to as the antiketogenic material. The ketone formers or bodies come from the proteins and fats. Since it has been generally accepted that the fats burn in the fire of the combustible glucose and that a deficiency of glucose to fats will lead to incomplete oxidization of the latter, it follows that ketone bodies will be circulated through the body as B-oxybutyric acid, diacetic acid, and acetone. To prevent this, it is important that a certain ratio exist between the keto and antiketogenic substances, which ratio is given as 1.5. In other words, 1 gram of glucose is capable of oxidizing or taking care of 1.5 grams of fat or fatty acid. To determine the ketogenic material it is necessary to know that 90 per cent of the fat and 40 per cent of the protein go to form fatty acids; therefore, the formula:

$$\frac{\text{F. A.}}{\text{Glucose}} = \frac{.90F + .46P}{C + .58P + .10F} = 1.5$$

This ratio will give your patient a well balanced diet and allow ample glucose to take care of the fatty acids, thus preventing ketosis.

Calculation of a Balanced Diet

With these facts in mind, let us proceed further to a determination of a balanced ration. The basal caloric requirement, as previously stated, is dependent upon the surface area of the body, and may be estimated easily and quickly from the graph prepared by Boothby and Sandiford (*Boston Medical and Surgical Journal*, September 22, 1921). The balanced ration or proportion of fat, protein, and carbohydrate may now be determined by either of two methods, namely (1) from the graph as prepared by Dr. R. M. Wilder, of the Mayo Clinic (*J. A. M. A.*, Sept. 17, 1922); or (2) from Woodyatt's formula. The protein quota of the diet is calculated from the weight—2/3 to 1 gram for each kilogram of body weight for adults, and 1 gram or more per kilo for children. Thus, the remainder of the diet for the 24 hours must come from the carbohydrates and fats. However, they may be readily determined from the Wilder graph. In using Woodyatt's method, a little more computation is required. Let

G=total glucose

C=carbohydrate

P=protein

F=fat

The total calories divided by 17=G.

$$\frac{2 \times \text{weight in kilograms}}{3} = P$$

$$\frac{8G}{10} - \frac{P}{2} = C$$

$$2C + \frac{P}{2} = F$$

It is well to see that the F. A. to glucose ratio does not exceed 1.5. The foregoing methods may be found in the sixth edition of Friedenwald and Ruhrah's "Diet in Health and Disease."

Insulin

When shall insulin in the uncomplicated case be given? Immediately upon entering the hospital, at least a urinary and blood sugar should be done. Twenty-four hour specimens should be started and examined daily, testing also for ketone bodies. If the patient remains sugar free on the basal diet for 2 or 3 days, it is

gradually increased by adding 5 grams of carbohydrate and 10 grams of fat at intervals of a few days until it becomes sufficient for body needs. Some authorities recommend double this amount. If the patient continues to excrete sugar for 4 to 6 days on the initial diet, or if it reappears before the desired diet is reached, then insulin is indicated. In the uncomplicated case one unit of insulin will take care of approximately 2 grams of sugar. Thus, if the urinary sugar output is 40 grams, give 20 units of insulin, divided into 3 doses, 20 to 30 minutes before each meal. The largest dose is given before the morning meal, the smallest at noon. If this is not sufficient to cause a disappearance of the glycosuria within 2 or 3 days, gradually increase it according to the urinary sugar output and the blood sugar determination. 60 to 120 mgs. per 100 c.c. of blood is considered the normal limits of blood sugar, but remember that cases of long standing may have a high sugar tolerance and therefore a higher blood sugar level than normal. In these cases, care should be taken that the blood sugar is not brought down too low. After a disappearance of the glycosuria, gradually increase the diet, as stated before, keeping the proteins the same as the initial calculation. After the case is well under control and before the maximum diet is attained, the proteins should be increased to 1 gram per kilo of body weight if consistent with the patient's needs. The idea is to work up to a diet sufficient to take care of the individual for moderate exercise or heavier work. The weight of the patient once or twice a week will serve as a good index to the efficiency of the diet and progress of the patient. It would probably be well to mention here that in case of the obese or overweight, the basal caloric requirement should be determined upon what the individual ought to weigh, and then a gradual weight reduction undertaken.

After the patient has been on a maximum diet for a few days, the daily 3 injections may usually be decreased to two, giving the larger dose before the morning meal and the smaller before the evening one. It is a mistaken idea that the effects of insulin are for a short while only, and therefore 3 or more injections are always necessary. Its effects will last from 4 to 12 hours depending upon the size of the dose, the amount of converted carbohydrate, the blood sugar level, and general condition of the patient. If the dose of insulin is small, even a daily morning injection may be sufficient.

While convalescing, the patient should be taught the character of his disease, the principles of his diet, a simple laboratory test for sugar, and how to administer insulin to himself. He should be given a good practical diabetic book to read also. The larger hospitals have a regular class for diabetics to attend and obtain detailed instructions. At least once a month the patient should report to the physician for a complete check up, and sooner if anything goes wrong. Thus, the successful treatment of a diabetic will depend upon a proper education of the individual and cooperation on the part of both patient and physician.

Some physicians begin the administration of insulin at the outset in order to get a more rapid reduction of the hypoglycemia, thus lessening the stay of the patient in the hospital and keeping the expenses at a minimum. This method may be all right in the hands of the expert, but it is a dangerous procedure for the average physician.

Hypoglycemia

One must always be on the lookout for hypoglycemia or "insulin shock," as it is a more serious condition than hyperglycemia. The blood sugar is thus very important, and as the urinary sugar decreases, such determinations should be made more often. The early symptoms of hypoglycemia may be enumerated as hunger, nervousness, weakness, pallor of face, increased pulse rate and profuse sweating. If these symptoms are not properly combated by the administration of sugar, orange juice, candy, or other forms of carbohydrate, the patient may develop dyspnea, disturbed vision, delirium, and then go into complete unconsciousness and death.

Home Use of Insulin

Since a number of cases have to be treated at home, the physician as a rule has to rely chiefly on the urinary findings in the absence of a technician. If the patient becomes sugar free on the calculated diet, all is well and good. But the trouble comes when glycosuria persists in spite of the basal diet, and insulin is required. Since even a small amount of insulin can do untold damage, it is wise in these cases to begin with one unit and gradually increase to five at one dose. This should be increased or decreased according to the glycosuria or caloric need of the patient.

Diabetic Coma

This is an accident and should not occur nowadays. It is stated that a patient who has been in coma 24 hours or requires 80 units of insulin within 12 hours is practically hopeless. As soon as the diagnosis is made, inject 40 units of insulin subcutaneously, and immediately follow with 30 to 40 grams of glucose by mouth, intravenously, or per rectum. Glucose equivalent in orange juice may be given by mouth if possible. Specimens of urine should be collected at one to two hour intervals, catheterized if necessary, and then examined for sugar and acetone bodies. Following the initial dose of 40 units, it is safe to say that about 20 units will have to be given every 3 or 4 hours for as many doses. After that, 40 units should be administered daily for 2 or 3 days—until a maintenance diet can be given,—and then the insulin should be decreased if found necessary.

Apart from hospital practice, Joslin prefers to inject 10 to 20 units intravenously. If no improvement occurs within an hour, he injects several doses—up to 4,—and thereafter smaller doses (5 to 10 units) at two to four hour intervals for the remainder of twelve hours.

If acetone bodies are still present after a disappearance of glycosuria, you should administer glucose solution equal in grams to units injected. This may be given per mouth if possible, or by rectum, subcutaneously, or intravenously. Subcutaneously, 5 per cent solutions given, while 5 to 50 per cent are given intravenously.

In conjunction with the above treatment, other measures are important. Rest and quiet, warmth, gastric lavage if vomiting is present, forced fluids, enemas, and stimulation with caffein and digitalis. The use of sodium bicarbonate has been advised against by prominent specialists.

Diabetes in Infections and Diabetic Gangrene

I shall touch very briefly upon these conditions. In regard to infections, remember that the tolerance of the individual is lowered and that the amount of insulin required daily during the period of a complicating disease will be greater than the dose necessary at other times. Even with patients already receiving insulin the mistake is often made by lowering the amount of insulin instead of increasing it.

Patients with diabetic gangrene should be given a higher carbohydrate diet than that employed in the uncomplicated case, and the insulin increased to take care of this diet. As the lesion heals, the dose may usually be gradually diminished.

Diabetes in Children

The treatment is essentially that of adults, but the prognosis in all cases more serious. They do not seem to stand diabetes as well and are more liable to acidosis. They require more protein on account of growth, 1½ to 2½ grams per kilogram of body weight. On account of developing acidosis more easily, less fat per kilo must be given. Friedenwald and Ruhrah state that "since diabetes in children is usually severe, and since tolerance does not seem to increase with the increase of body weight through growth, these patients usually require insulin."

Bibliography.

1. Friedenwald and Ruhrah: Diet in Health and Disease, Sixth Edition, p. 609.
2. The Lilly Research Laboratories: Treatment of Diabetes Mellitus.
3. Osler and McCrae: The Principles and Practice of Medicine, Ninth Edition, p. 433.
4. Woodyatt: Objects and Method of Diet Adjustment in Diabetes, *Archives Internal Medicine*, 1921, Vol. 28, p. 125.

109 *North Union Street.*

IMPROVED HEMORRHOIDAL TECHNIC.

By J. B. H. WARING, M. D., Blanchester, Ohio.

Several years ago the writer outlined in a general way the technic of electro-coagulation treatment of hemorrhoids; and was gratified to note the widespread interest manifested, both by surgeons and by general practitioners, in this newer method of treatment of this well-nigh universal affliction of modern civilization. With a more sedentary life, and the ultra-refined dietary which accompanies life today amongst the more civilized and enlightened people, constipation has come to plague us in more ways than one; and one of these ways is the development of hemorrhoids. From a treatment standpoint, it is not so important, perhaps, as to whether constipation causes hemorrhoids, or whether hemorrhoids cause constipation. At any rate, the two go hand in hand,—in adult life mostly.

We will not concern ourselves in this brief paper with the medical treatment of constipation and hemorrhoids. Either of these topics constitutes a large order in itself, on which we physicians and surgeons can well set our re-

spective houses in order, and bring our knowledge right up to the latest dietary and therapeutic methods of handling.

The surgeon, as a rule, only sees for treatment purposes the well-developed and bothersome cases of hemorrhoids; that is, the average person does not bother about seeking treatment for "piles" until the aforesaid piles develop to a stage where they begin to take all the joy out of life for the afflicted individual.

The treatment of a well-developed case of hemorrhoids is strictly surgical; and, in the vast majority of cases, the sufferer can be completely relieved by proper surgical treatment, provided the patient can steel himself to go through the mill, which modern surgical treatment brings in its train. In other words, strictly surgical treatment of hemorrhoids is effective; but not so painless as to demand encores. From an economic standpoint, hospitalization for a week or ten days is also to be considered.

Considering all factors, we believe that electro-surgical treatment of hemorrhoids is the procedure of choice, both from the surgeon's and from the patient's standpoint. We can relieve our hemorrhoidal patient by electro-surgery just as effectively (if not more so) as by surgery; we reduce his pain and suffering to a minimum; do our work under local anesthesia entirely; eliminate the expense and time loss of a week or two of hospitalization; and reduce the ordeal from major to minor surgery, practically devoid of shock, hemorrhage or infection.

In our former paper, we described electro-coagulation of hemorrhoids, using the bi-polar d'Arsonval high frequency electric current to coagulate our hemorrhoids, much as we would poach an egg. Results in a considerable series of cases over several years have been completely satisfactory, with one exception. That exception was that here and there our post-operative reaction was enough to cause actual pain for a day or two. The average patient was completely ambulant throughout, and had no more (if as much) pain and discomfort than his ordinary "attack of the piles" brought; but with neurotic or sensitive patients, once in a while we did have actual pain after operation. While easily controllable with medication, this was an objection, just as it is to surgical operation proper. Coagulation of the hemorrhoidal tissue is brought about by resistance of the tissues to current passage from one electrode to the other, brought as far as possible to a peak in the hemorrhoid proper. From the nature of the procedure, however, it was difficult to avoid considerable over-heating of extra-hemorrhoidal tissue; not enough to coagulate and thus destroy tissue we did not desire to destroy; but enough at times to cause considerable heat-irritation and congestion in peri-anal tissues. This, then, has been our only objection to electro-coagulation proper in hemorrhoid work; but it was an objection; and one that called for considerable experience and judgment on the part of the operator, to eliminate as far as possible.

The operator, who becomes perfectly satisfied with his technic, so satisfied that he no longer strives to seek greater efficiency and perfection, is not only standing still, but in a large way going back. The world is advancing day by day; our honored profession is moving ever onward, and we, as individuals, cannot stand still; we go forward, or we slip back.

Having definitely located at least one objection to electro-coagulation in hemorrhoidal work (the same objection holds good in tonsillar electro-surgery), we strove to eliminate this post-operative reaction, or else, to reduce it to a minimum.

For success in this quest, we are very deeply indebted to William L. Clark, of Philadelphia, who has been treating hemorrhoids with the Oudin mono-polar current, the effect of which is a tissue electro-desiccation rather than a coagulation. Since shifting to this desiccation current, our operative results have been equally as good, and post-operative reaction rendered practically negligible. The reason for this is that our electro-desiccation is very superficial as compared to electro-coagulation, and our tissue desiccation is thus limited practically to the hemorrhoid to be destroyed.

While the technic in a general way is the same, with exception of current change, as previously described; there has been improvement all along the line towards rendering the treatment easier for the patient.

In practically all adult patients, morphin or hyoscine-morphin is given by mouth about a half hour before operation. This obtunds the nerves to a considerable degree, and brings

the patient to operation in a non-apprehensive attitude.

We prefer the lithotomy position: other operators like the lateral prone position. This is largely a matter of choice.

After cleansing the field of operation, a drachm or two of a quinin-urea containing ointment is deposited within the rectum with a pile pipe.

Next, the sphincters are infiltrated with a solution of freshly prepared novocain-quinin urea, using equal volumes of a 1 per cent solution of each. As a rule, from one to two ounces of solution are used. We have modified the technic somewhat for this infiltration anesthesia. With the gloved index finger of the right hand introduced into the rectum and hooked over the sphincter as a guide, our syringe needle (about an inch in length) is inserted in the mid-line about half inch posterior to the anal margin, and carried directly into the sphincter tissue, guided and protected by the finger introduced into the rectum previously. Our aim is to infiltrate the sphincter, without ballooning the loose subcutaneous tissues about the anus proper. Through the one needle puncture, we may carry our needle point to the right and then to the left laterally, thus infiltrating the posterior half of the sphincter. Withdrawing our needle we make a second insertion just anterior to the anal margin, and infiltrate the anterior half of the sphincter in a similar manner. With slight manipulation of the hands, all of this injection is done with the left hand, the right index finger in the rectum serving as a guide throughout. Properly done, our patient has little discomfort from the two needle insertions; and anesthesia of the parts rapidly ensues. By avoidance of ballooning the tissues about the anus, we avoid considerable post-operative edema in this region.

As soon as the injection is completed, we notice a marked relaxation of the sphincters, and hemorrhoids which before were almost entirely internal and hidden from sight, come down into view and are accessible. This process may be facilitated by application of a suction cup over the anus for a pull or two or gentle digital dilatation; this as a rule completely everts our hemorrhoids easily and quickly, allows us to see just how extensive the process is, and thus quickly decide on our operative course. We have not divulsed or injured the sphincters in any way; yet our hemorrhoids are fully exposed for operative attack.

Having decided on our first point of attack, the given hemorrhoid mass is picked up with suitable blunt-toothed forceps, and gentle traction made thereon until the mass is fully exposed; then we apply across its base, a hemorrhoid clamp or other similar forceps. This has a triple function. It serves as a convenient handle for manipulation of the given hemorrhoid mass; and it also acts as a guide to mark off the amount of hemorrhoid tissue we desire to separate. More important still, however, as pointed out by Tousey in a recent article, the metal clamp held in the ungloved hand of the operator, serves to shunt the current from the active needle electrode through the pile-mass to be desiccated, through the operator's hand, arm and body, thus limiting sharply the amount of heat generated in the rectal tissue on the distal side of the pile clamp. With electro-coagulation, using the bipolar current, most of the patient's post-operative discomfort was due to heating up of the tissues about the rectum through resistance to current passage,—not sufficient heating-up to destroy the tissue, but sufficient to give a considerable sense of heat and discomfort at times after operation. By using a pile clamp or other forceps of fairly good size, the current heat is so dissipated that the operator's hand does not receive an undue amount of heat either. Attention to this point serves to largely obviate post-operative discomfort.

We cannot measure the Oudin current as we do the d'Arsonval bipolar with a meter; consequently, in operating, the surgeon has to learn by experience the length of spark to use in his work.

The pile-mass held in forceps is quickly electro-desiccated across its base, in practically the same manner that the electro-coagulation needle is applied. As each pile-mass picked up is electro-desiccated across its base, it is released; and a fresh pile-mass taken up, until the field is covered.

At conclusion of operation, the anus is well greased with a soothing ointment, a dressing applied to prevent soilage of the clothing; and our patient is ready to go about his own affairs. The writer is at work on a special forceps,

which simplifies the procedure considerably; but this is not completed at this time.

As our novocain anesthesia wears off somewhat, the patient will notice a warm "sunburn" like sensation about the anus for perhaps a half hour or so. This gradually passes off: and our quinin and urea portion of the solution maintains a partial anesthesia of the tissues for several days longer, by which time discomfort has practically abated entirely. We have derived much comfort for our patients through post-operative usage of one of the newer non-narcotic sedatives; allonal, or a mixture of barbital, grains 1. and antipyrin, grains 2, to the tablet. Our patient is given two of these tablets on leaving the operative table; and instructed to use two every three hours if necessary. As a rule, a dose for morning and night for several days insures complete comfort for the patient, even if of quite a neurotic type. Bowels should move easily once or twice a day. Patient is given a tube of the quinin-urea ointment with pile pipe and instructed to insert a small quantity into the rectum night and morning. In addition, we place the patient on full dosage of phenolphthalein-petrolagar, the dosage being gradually cut down as the bowels move easier. Where necessary, the bowels are emptied at least once a day, with usage of glycerin suppositories. Patients with very large hemorrhoid masses sometimes have some little edema and discomfort of the parts for a day or two, but, as a rule, this is of little moment, and quickly disappears with repeated hot Sitz baths.

Patients are instructed to use their own pleasure about ambulation. Aged, infirm or neurotic patients do better if kept quiet a day or so at home; but not necessarily confined to bed. Patients in ordinarily vigorous health usually go about their own affairs right along, with merely minor complaint of moderate discomfort for a day or so after operation.

The operation has been so uniformly satisfactory, both from the standpoint of patient and operator alike, that it is felt the day of surgical excision of hemorrhoids should be a thing of the past. Hemorrhoidal electro-desiccation is applicable to practically 100 per cent of hemorrhoids; and with proper technic we can almost guarantee our patients' elimination of their hemorrhoids in every case. Thus far, the writer has seen no sign of recurrence of any nature; and our patients have been most enthusiastic over results.

Some operators prefer to treat internal hemorrhoids through a speculum, and some merely desiccate one pile-mass at a time. It seems to the writer that this but adds unnecessary complication to a simple technic; and it certainly would seem better to give our patient at most a moderate discomfort for a day or two and be through with his hemorrhoids at one sitting, than to prolong the treatment and discomfort over weeks.

Patients will gladly submit to hemorrhoidal desiccation, where they cannot be induced to consider surgical intervention; and our most enthusiastic boosters are patients who have been treated by this method. Hemorrhoids have become an almost universal complaint with our advancing civilization, sedentary life and ultra-refined dietary; and, where a treatment as simple and effective as this is at hand, every physician would do well to see for himself the opportunity for affording widespread relief in his community. As with surgical work of any type, the physician should be well acquainted with the surgical anatomy of the parts, and should see the work done by some physician or physicians experienced in the operation before essaying electro-surgery by himself.

In operating on these patients, it goes, of course, without saying that we should keep them under close observation for a considerable time after operation, during which period we should strive earnestly to educate them up to a proper dietary, along with hygienic living. These matters attended to, we can assure our hemorrhoid-desiccated patients that these afflictions will be a thing of the past.

THE MODERN MEDICAL CLINIC.

By STUART McGUIRE, M. D., Richmond, Va.
McGuire Clinic.

In America prior to the Civil War a single individual was capable of mastering the existing knowledge of medicine and of doing justice to all the needs of his patients. He was in truth as well as in name the family doctor. He attended every member of the household and his opinions on matters pertaining to his profession were regarded as final authority.

In time, however, with the advances made in all sciences, one man was no longer able to

keep posted on the progress in medical knowledge, and so certain men began to devote their time and energy to the study of special diseases. These specialists, as they were called, by concentration of study and limitation of practice to certain definite organs or diseases, were enabled in a few years to acquire greater diagnostic skill and more successful methods of treatment in their special line of work than other men of equal ability would obtain in a lifetime of general practice.

At first it was only natural that the old family physician was suspicious of this new product of evolution and was loath to seek help from younger men, but eventually he yielded to the logical necessity of changed conditions and, when occasion required, made it a practice either to call the specialists in consultation or to refer cases to them. Probably the first clearly recognized specialist was the eye, ear and throat man, but he was shortly followed by the gynecologist, orthopedist, urologist, neurologist, dermatologist, pathologist, roentgenologist and a host of others.

The subdivision of medical knowledge often made it necessary for a patient with an obscure or complicated disease to consult a number of different authorities. When the examinations by these specialists were completed, the results were compiled either by written reports or by a personal conference, and a diagnosis made and a line of treatment outlined. The contact thus established between the various specialists in a community led to personal friendships or professional confidences, and it was only natural that in time the so-called Group System came into being. By this is meant that a number of specialists, either with or without a definite agreement, made it a practice to refer cases to each other unless there was a strong preference on the part of the patient for other practitioners. Often these specialists worked in different parts of the city; again, some or most of them may have had offices in the same building. Each charged the patient who was able to pay a separate fee for his individual services. The quality of the professional work done by these groups was usually of high order, but the objections to the system on the part of the patients were the fatigue and loss of time incident to going from one office to another, and the aggravation of getting a number of separate bills and never being exactly certain whether or not the total cost had been finally settled.

Having traced the evolution of medical practice through the stages of the family doctor, the specialist, the consultant and the Group System, we finally come to the Medical Clinic. By this is meant that a staff of physicians, surgeons and specialists unite as a firm or corporation and occupy a building especially designed and equipped for the purpose to which it is devoted, where patients can be conveniently, expeditiously and efficiently examined and treated and charged a combined bill through a central office for the entire service rendered.

As yet no standard method of organizing a Clinic has been worked out and the various plans employed have been based on local conditions. Little has been written on the subject; hence I have determined to describe the organization and operation of the Clinic with which I have been connected for the past two years, and to state as impartially as I can the advantages and disadvantages a Clinic offers to patients and to members of its professional staff. I know in discussing the subject I run a risk of criticism, but the many questions I have been asked with reference to details have convinced me that the subject is one of vital interest to many medical men at this time. What I write is prompted by a sincere desire to give facts that will help certain groups to organize Clinics which will be successful and that will keep other groups from organizing Clinics which are predestined to failure.

The personnel of the staff of the Clinic of which I am a member was composed chiefly of men who had worked together for years as associates in private practice, as teachers in a medical college and as officers in a Base Hospital in France. Each knew the other well and there was between all the bond of esteem, confidence and friendship which made for harmony and co-operation.

The physical plant of the Clinic consisted of a long established and well organized hospital and a large nurses' home which immediately joined it. The nurses were transferred to other buildings and the old nurses' home was remodeled and equipped to suit the new purpose for which it was designed.

The legal procedure which was followed to give the Clinic corporate existence was the creation of a joint stock company to hold the

property and a partnership consisting of five members to carry on the business. A contract was entered into between the two by which the hospital corporation leased the property to the partners for a long term of years at a rental which was equivalent to six per cent on the appraised value of the buildings and equipment. Thus the hospital corporation was guaranteed a dividend on its stock and the partners were guaranteed undisputed possession of the property for the use of the Clinic as long as it complied with the terms of the contract. The five partners constitute the Executive Committee of the Staff and fix the salaries of its members. Any profit from the year's work after all expenses have been paid is called surplus and is divided between the members of the Staff and a reserve fund in accordance with the terms agreed upon annually.

The immediate proximity of the Clinic Building to the hospital has proved of extreme importance in the saving of time, labor and money. Each floor of the Clinic Building communicates directly with the corresponding floor of the hospital, thus giving members of the staff easy access to patients in the hospital and enabling patients to be brought from the hospital to the Clinic for examination, treatment or consultation with members of the staff. By reason of this arrangement, one administrative department, one X-ray department and one pathological department cares for the work of both Clinic and Hospital.

When a patient enters the Clinic, he is directed to the registration desk, which is in charge of a tactful and experienced nurse. If he asks to see some special member of the staff, he is given a card to that particular man and sent to the waiting room on the proper floor. If he does not ask for any special person he is referred to the department to which the nurse thinks it most appropriate to send him. It has been found good policy always to send the patient to the doctor of his choice, no matter how obviously wrong is his selection. If he goes to the surgeon when he should go to the internist, a few words of sympathetic explanation will effect a proper transfer without misunderstanding.

When one of the staff is consulted by a new patient, he questions him as to the nature of his symptoms and then either takes charge of him personally or transfers him for reasons, which he explains, to some other member of the staff. If he personally takes charge of the patient, he can examine and treat him individually; or if it seems advisable he can refer the case to other members of the staff for special examinations. Written reports of these examinations are sent from the various departments to the member of the staff in charge of the patient, and he consolidates them with the other clinical records of the case. In obscure or important cases, personal conferences are held between the members of the staff, who have examined the patient, and the points at issue freely discussed. The member of the staff, who originally took charge of the patient, or "opened the case," always has the final talk with him or "closes the case." Members of the staff are encouraged to handle cases individually when they can do so satisfactorily, but they are made to feel that every facility afforded by the Clinic is at their disposal when needed by the patient. In other words, in simple cases unnecessary examinations are discountenanced, but in doubtful cases neither time nor trouble nor expense are spared to reach a correct diagnosis.

The system of making charges for diagnostic examinations in the Clinic is as follows: As soon as the patient is recorded at the registration desk, a card is made out on which are to be entered charges for the examinations made in the various departments, based on a schedule of fees adopted by the Clinic. After the case has been closed, the member of the staff responsible for the patient makes a charge on the card to cover all the work that has been done. The member of the staff may indicate that no fee be charged or that the fee be larger or smaller than the aggregate of its items because of reasons which seem good to him. There is a maximum fee for diagnostic examinations in different types of cases. This limit was adopted in order to permit unlimited study of obscure or interesting cases without prohibitive cost to the patient.

Except for charity and courtesy cases, the charges for diagnostic study of patients in the Clinic are fairly uniform. The charge for medical and surgical treatment in the hospital, however, varies and depends on the ability of the patient to pay, the benefit the patient has received and the time, worry and responsibility the case has entailed. When the patient is dis-

charged from the hospital, the medical or surgical attendant, who is in charge, fixes a provisional fee to cover the professional services rendered by him and the other members of the staff. This charge then goes to the Director of the Clinic, who must approve or alter it before it is entered on the books in the business office.

In the system of bookkeeping adopted in the Clinic all the professional fees of every member of the Staff are entered on a common ledger and no effort is made to show the drawing power of any individual. It is recognized that some departments will be profitable while others will be run at a loss, and that some individuals will be money-makers while others will not. The work of each department and of each individual is regarded as essential, and no effort is permitted to increase the prestige of one department or individual at the expense of another. It is a case of all for one and one for all: and each man gives his entire time and energy to advance the interest of the Clinic as a whole.

So much for the details of the organization and operation of the particular Clinic with which I am connected. I will now discuss the policies and principles which apply to Clinics in general.

The attitude of a Clinic to the outside profession is a matter of importance. The members of the staff should not do general family practice, but confine their work to the Clinic and its hospital. They should not attend patients in their homes except in cases of emergency or in exceptional instances where from personal or previous professional relationship it is obligatory to do so.

Patients who come to a Clinic are usually referred by their family doctors, but some come of their own volition. In either instance great care should be taken to send cases back to their previous attendants with a full report of the results of the examinations made or the treatment that has been carried out. Every effort should be made to overcome the distrust with which almost all innovations are at first viewed, and to convince the members of the general profession that a Clinic is not a cut-rate competitor but a friendly and co-operative institution to which they can refer cases with the assurance that their interests will be protected.

The advantages of a Clinic to a patient are as follows: He is under the direct charge of a member of the staff who is personally responsible for the management of his case. He has immediately available the opinion and advice of various specialists. He has the benefit of laboratories equipped with instruments of modern diagnostic precision. He is carefully and systematically examined and abnormal conditions, of which he was ignorant, are often discovered in time for their arrest or cure. He is charged a single fee for the diagnostic study of his case which does not exceed a fixed amount.

The objections of the system to a patient are that to a degree he loses his individuality and becomes more a case and less a person. He has the privilege of selecting the member of the staff who has charge of his case and should always be allowed to consult an outside specialist if he desires to do so, but as a rule he trusts to the reputation of the Clinic for the expert knowledge of those to whom he is referred. All Clinics have specialists but all specialists are not experts.

There are certain routine methods of examination necessary in a Clinic which work the greatest good to the greatest number, but in some cases these examinations yield only negative results, and the only benefit to the patient is the satisfaction of knowing he has been thoroughly studied and that he has no organic disease. Again, a patient may learn from a complete examination that he has some unimportant physical disability of which he was previously ignorant, and once possessed of this knowledge he may be obsessed with a desire to have it corrected and insist on submitting himself to unnecessary and even injurious treatment.

The advantages a Clinic offers to a member of its staff may be summarized as follows: He is free from professional expenses and has a guaranteed salary with a probability of a bonus at the end of a year. If the Clinic prospers he will prosper with it. He is relieved of business worries that go with private practice and can devote his time and thoughts to professional work. His office is heated, lighted and kept in order. His telephone calls are promptly answered. His patients are courteously received and given appointments. He has nurses to assist him in his examinations. He has stenographers to record his case histories and

answer his correspondence. He has no ledger to keep, no bills to make out and no collections to supervise. All this is done for him through the Director of the Clinic. He is able to count on an adequate vacation at a definite time, on an opportunity to attend medical meetings and on hospital care in case of personal illness, with the knowledge in each case that his salary will continue and that his work will be cared for by the other members of the staff during his absence.

He works in an agreeable atmosphere, comes into frequent contact with congenial associates, and is stimulated mentally by the interesting professional problems that are discussed daily at small conferences and more formally at the regular meetings of the staff. The greatest joy, however, comes from the satisfaction of feeling that he has the opportunity and facilities for doing high class work, and that in doubtful cases he can share responsibility by calling in consultation other members of the staff in whom he has trust and confidence.

From the foregoing it is apparent that the modern Medical Clinic offers members of the staff professional advantages that are incomparably superior to those he can secure in any other form of practice. What are the disadvantages? They are financial and personal. No mature professional man who has achieved marked financial success can become a member of the Clinic with the expectation that the salary he will receive will be as large as the money he previously earned in private practice, and no young man beginning the practice of medicine can enter a Clinic with the hope that he will ever earn as much money as he would if he ultimately attained conspicuous success in private practice.

The answer to the objection as it applies to the older man is that, if he continues his work as an individual, when he dies his work dies with him, whereas, if he becomes a member of a Clinic, when he dies his work will be carried on by the organization.

The answer to the objection as it applies to the younger man is that the salary paid by the Clinic offers the certainty of a comfortable living, that the work in the Clinic gives him a training and experience which will lead to the development of his professional ability, and that if later in life he is dissatisfied wtih the position in which he finds himself, he can resign from the staff when an advantageous opportunity offers.

The personal objections are a little more difficult to state and answer. A man when he becomes a member of the Staff of a Clinic loses in some degree his independence and in all of his actions he will have to consider how what he does will affect the interest of the Clinic.

Again, becoming a member of a Clinic, while it tends to closer personal friendships within the organization, sometimes leads to a narrowing of the circle of acquaintances, or even possibly the alienation of former friends. It is very important for a Clinic to minimize this danger by the adoption of a proper policy and the maintenance of a generous attitude to the general medical profession. If this is not done the members of the staff may suffer from professional isolation and even professional ostracism.

In conclusion, I wish to say that a medical Clinic is no royal road to success. At the beginning the sum total of the patronage will be less than the sum total of the patronage of the individuals who consitute its staff. The establishment of a Clinic will not create patronage, but will merely give the members of its staff facilities to do work more conveniently, expeditiously and efficiently. If the patronage grows, it will be for the same reason that the individual succeeds, namely, a recognition by the public and profession of satisfactory service rendered.

Again, the establishment of a Clinic in connection with a hospital which is not making expenses either because of lack of patronage or poor business management, will not help the hospital and it will impose a fatal handicap on the Clinic. For a medical Clinic to be a success there must be adequate patronage, proper physical facilities, sufficient financial capital, and a well-balanced staff of competent men who will work harmoniously together.

While a medical Clinic is a business enterprise, and its primary purpose is the care of the individual patient, still it would be a poor group of professional men who would not strive to develop the possibilities it affords for philanthropic, educational and scientific work. Means should be provided for the examination and treatment of indigent patients in both Clinic and hospital. Courses should be established for the instruction of nurses, dietitians,

technicians and medical graduates. Advantage should be taken of the opportunity afforded by the combination of clinical material and laboratory facilities to carry on research work.

To achieve its highest success, a medical Clinic should not only have a body and a brain, but a conscience and a soul as well.

HISTORICAL NOTES ON SYPHILIS

By T. LATANE DRISCOLL, Ph. B., M. D., Richmond, Va.
Associate in Syphilology, Medical College of Virginia.

For many years a fierce battle of literary research has raged as to the geographic origin of syphilis. This research represents some of the literary masterpieces of medical literature, the forensic battle, *pro* and *con*, giving the honest seekers of fact no consolation or final idea upon which to base an opinion.

The following facts are cited with no intention of finally disposing of the subject, but that the student may have some conception of the history and be allowed to draw his own conclusion.

The term syphilis first appeared as descriptive of the disease, as known today, in 1530, in a poem by Heironymus Fracastorius, published in that year at Verona, "Syphilidis sive de Morbo Gallico libri tres." The legendary history is that Syphilus, a shepherd, was guarding thousands of white sheep on the Island of Ophyre under the burning heat of the sun, when the prairies were dry and the forest offered no shade to the shepherd, nor did any breeze offer relief. Pitying the herd and angry on account of the heat, he looked to the sun and spoke blasphemous words. The sun sent punishment to Syphilus; his body became covered with sores, he passed sleepless nights and had spasms in his limbs, and from him the disease took its name. The people called it "Syphilis."

The etiology of the word syphilis is a matter of controversy, but Talmon believes as follows: "It is stated by some that it is derived from *sus*, a hog, and *phileo*, I love, referring to un-natural intercourse between the herdsman and a sow." Others maintain syphilis is a contraction of *sipalos*, which means to reproach. G. D. Delprat states that the word might have been derived from Siphilas, the name of the staff officers of Constantianus, as given in Procopius' book on the Gothic Wars.

Procopius wrote in the time of Justinian, about 534 A. D., and about the time of Fracastoro his writings had all but disappeared. While at the University of Padua, Fracastoro, among others, was associated with Andrea Navagaro, who edited the works of Ovid, Horace, Virgil, Lucretius, for the Aldine Press. This probably accounts for the evident use by Fracastoro in his great poem, Syphilus, these poems of antiquity. "There can be but little doubt that the myth of Ilceus of the poem of Syphilus is an imitation of that Aristaeus, in the fourth book of Virgil's Georgics. Alcithores is with scarcely a doubt the nymph, Alcithoe of Ovid's verse, who, for her impiety in denying that Jupiter was the father of Bacchus, was changed into a bat, while Ilceus can scarcely be other than Virgil's and Ovid's Hylens. The close resemblance in names and myths must be accepted; therefore, the name Syphilis must be found in similar surroundings; it must be found among ancient writings, with an appropriate myth as a background."

Niobe, the daughter of Tantulus and wife of the King of Thebes, in her wealth and station, boasted of both, and also of her seven sons and daughters. She considered herself better than Leto, who had been driven from land to land until on the Island of Delos she had given birth to two children, Apollo and Artemis. These two children took vengeance upon Niobe for this and slew her fourteen children, while Zeus caused her to be transported to the Mountain Sipylus on the coast of Lydia near Symrna and metamorphosed into stone. There she wept forever over her misfortunes. Sipylus was also the name of one of her sons.

"The identity is even more marked when it is known that in some works of Ovid, Sipylus, for both the mountain and Niobe's son is written 'Syphilus.'"

It might be argued that this is a mere coincidence, but when the practical identity of this myth with that of Fracastorius, in his immortal poem, is borne in mind, it seems as though there should be no confusion of the etiology of the word. Like Niobe, Fracastoro's shepherd compares the wealth of here with the poverty of Heaven, and was therefore punished by the Sun god. "Hence it is but natural to expect that the shepherd should receive a name reminiscent of Niobe, his prototype, of whose story his own was but an obvious imitation." May it not be that Fracastoro felt that the malady in the first book of the Iliad which destroyed hundreds at each clang of Apollo's

silver bow was but an earlier appearance of the curse which he gave the name of Syphilis? This disease, however, had other names appended in keeping with anger and scientific glory. Thus, the Italian rendered furious by the invasion of Charles VIII translated *gros mal* as *mal franzoso*, as an expression of their anger. In Germany the disease became known as Franzosenkramkheit. The term "French pox" comes down to our day from the above expression. The name *mal francais* constitutes a title of glory for medical science in a section of France in recognizing a new disease.

Syphilis, unlike most diseases with a more or less clear cut description awaiting only the scientific frills, suddenly made its appearance on the stage of medicine as a new drama unfolded over night with its final tragedy written upon posterity, awaiting benefactors like Ehrlich, Schaudinn and others.

The very fact of its sudden appearance in Southern Europe in 1493 seems evidence for the adherents to the theory that Columbus' sailors imported the plague from the Western hemisphere. Yet we cannot lose sight of the fact that very excellent authorities reported this condition hundreds of years before the plague of 1493. Indeed, it is far fetched to assume that the disease should have had its origin among people who lived under ideal health conditions (as did the American Indians) and could have spontaneously given rise to a disease as malignant, without contact with some source of infection. There seems to be a very great tendency among ethnologists to associate the primitive of the Western hemisphere with the Asiatics, especially in Japan. Connected with this fact is the well-nigh incontrovertible research of Bloch; and Groenveldt states that the Chinese travelers about 1,600 years B. C. speak of poisonous girls seen in Java. Other translations tend to show that it was also known in China in the Chu dynasty in the year 1122 B. C. until 314 B. C. It spread from China into Japan, and from Japan it spread to America, either by migration or the traveling of junks on the ocean, more probably by migration from Behring Strait, and thence from the great Salt Lake region into Mexico and South America.

Gardy's book, "Medicine Among the Chinese," published in 1863, quotes some authorities of China's medical works 17 centuries before the Christian era. Descriptions of genital lesions were found in both man and woman. Egyptian archeopathologic findings, as demonstrated by Fouquet and others, suggest this disease in Egypt. Lortet and Caillard report lesions of undoubted syphilitic origin in skulls of Egyptian mummies. Celsius describes graphically, not only chancres, but secondary syphilitic lesions, including profound pains in the bones, of the ancient Romans. It seems from the above evidence that there was no spontaneous development in the American Indians, but, on the contrary, relative immunity had developed among these people, producing an attenuated form of this disease, so that they themselves were fairly free of evident symptoms, although they were highly infectious to those with whom they came in contact, lacking this type of auto-inoculation. As recorded by Pusey, Oviedo, who was in America within a few years after the discovery, reported in his works, that the "disease was contracted from Indian women by the Spaniards, and was brought by them to Spain, being thus transmitted to the Army of Charles VIII, and that syphilis should be called the West Indies disease rather than the French or Neapolitan disease." He also mentioned that "one of his brothers, Pinjou, contracted the disease, and that it is common among the Indians, but in its regions is not so dangerous as it is with us." At the supposed seige of the city of Naples by Charles VIII, of France, which was indeed not a seige, his army was welcomed, and immediately there occurred a debauch that has had few parallels in history: and with an army of known mercenaries the disease quickly spread over Europe, and thence to the four corners of the earth. It is today recognized as perhaps one of the most wide spread of maladies, the disease standing at this time at the head of all killing maladies.

Medical Arts Building.

Correspondence

Mask Sterilization Neglected.

Norfolk, Va.,
September 25, 1926.

To the Editor:

With the advent of the mask, now in such general use with mechanical devices for the administration of anesthetics, we are menaced with the danger to the welfare of every patient anesthetized unless the mask is sterilized. The mask seldom, if ever, is sterilized by the hospitals, physicians or dentists who use it.

The profession seems to have forgotten the danger in exposing the air passages to communicable diseases. "We strain at the gnat and swallow the camel."—cautious in the extreme to prevent wound infection, but entirely oblivious to the more serious dangers to which the patient is exposed while an unsterile mask is in use. Many of our patients go in for some minor operation (adenoids and tonsils, circumcision, etc.), and are exposed to tuberculosis, pneumonia, and myriads of other communicable diseases from which those suffer who have preceded them in anesthesia. Can you conceive of a more insanitary device, after being breathed into, spit and slobbered upon, and showered with emesis?

Prevention should be our "watch word" and the operating room, of all places, should receive our attention. The mask is easily sterilized, and as many should be sterilized at a time as are needed for the surgical service of the day.

Every patient anesthetized should be provided with a clean, sterile mask.

H. W. Phillips, M. D.

405 *Medical Arts Building.*

Proceedings of Societies

The Southwestern Virginia Medical Society

Held its regular semi-annual meeting in Blacksburg, September 9 and 10, the president, Dr. J. M. Miller, of Wytheville, presiding. There was an attendance of between seventy-five and one hundred and the meeting was altogether one of the best in the history of the Society. There were a number of voluntary papers, in addition to a symposium on "Diseases of the Gall-Bladder." Dr. Wm. H. Higgins, Richmond, invited guest, read a paper on "Some Circulatory Disturbances in the Post-Operative Patient."

At the business session, the following officers were elected for the coming year: President, Dr. Z. V. Sherrill, Marion; Vice-President, Dr. J. D. Willis, Roanoke; Secretary-Treasurer, Dr. E. G. Gill, Roanoke, re-elected.

The following were appointed to represent this Society in the House of Delegates of the State Society at its Norfolk meeting: Delegates, Dr. A. M. Showalter, Christiansburg, and Drs. J. T. Graham and J. M. Miller, Wytheville; alternates, Dr. W. W. Insley, Christiansburg, and Drs. C. F. Graham and W. H. Ribble, Wytheville. Time and place of next meeting will be announced later.

The Nansemond County Medical Society,

At its last meeting, endorsed the plan of the American Medical Association for relief work in calamities, and the president of the Society, Dr. F. J. Morrison, of Suffolk, was designated as the official to take necessary action in such events.

Dr. F. J. Morrison, Suffolk, has been appointed delegate, and Dr. J. Lewis Rawls, also of Suffolk, alternate, from this Society to the House of Delegates at the Norfolk meeting of the Medical Society of Virginia.

The secretary, Dr. C. F. Moriarty, reports that the monthly meetings are well attended.

The Southampton County Medical Society

Held its annual meeting at Franklin, Va., September 9th, at which time the following officers were elected for the ensuing year: President, Dr. B. A. Pope, Newsoms; Vice-President, Dr. J. A. Grizzard, Drewryville; secretary, Dr. W. T. McLemore, Courtland.

Dr. J. A. Grizzard was appointed delegate, and Dr. B. A. Pope alternate, to represent Southampton County Medical Society in the House of Delegates at the Norfolk meeting of the State Society.

The Alexandria Medical Society,

At a meeting on September 14th, appointed Dr. H. A. Latane delegate and Dr. Llewellyn Powell alternate to attend the Medical Society of Virginia at its meeting in Norfolk in October. Two new members have been received in the Society during this year. Dr. G. T. Klipstein, Alexandria, is president, and Dr. H. A. Latane, Alexandria, secretary-treasurer of the Society.

The Charlotte County Medical Society,

At a meeting on September 15th, elected Dr. Wm. R. Martin, Charlotte C. H., president, Dr. Ray A. Moore, Phenix, vice-president, and Dr. J. B. Bailey, Keysville, secretary-treasurer. Dr. C. W. Tucker, Drakes Branch, was appointed delegate to the State Society meeting in Norfolk, with Dr. J. B. Bailey as alternate.

The Truth About Medicine

THE TRUTH ABOUT MEDICINE

In addition to the articles enumerated in our letter of July 29th, the following have been accepted:

The Gilliland Laboratories, Inc.
  Antistreptococcic Serum 20 c.c.
Lederle Antitoxin Laboratories
  Poison Oak Extract—Lederle (In Almond Oil)
    Poison Oak Extract—Lederle (In Almond Oil) 1 c.c.
Lehn & Fink, Inc.
  Pituitary Substance—L. & F. Desiccated.
    Tablets Pituitary Substance—L. & F. Desiccated, ½ grain
  Anterior Pituitary—L. & F. Desiccated.
    Tablets Anterior Pituitary—L. & F. Desiccated, 1 grain
  Posterior Pituitary—L. & F. Desiccated
    Tablets Posterior Pituitary—L. & F. Desiccated, 1/10 grain
Eli Lilly & Company
  Diphtheria Antitoxin, Purified, Concentrated—Lilly
H. K. Mulford Company
  Ivyol
    Hypo Units Ivyol 0.7 c.c.
E. R. Squibb & Sons
  Erysipelas Streptococcus Antitoxin Concentrated—Squibb 15 c.c.

NEW AND NON-OFFICIAL REMEDIES

Ivyol.—A solution in olive oil of an irritant or vesicant oil extracted from the fresh leaves of poison ivy. Ivyol is used to relieve the symptoms of the dermatitis produced through contact with poison ivy. It is marketed in "Hypo Units," collapsible syringe containers, each containing 0.7 c.c. of ivyol.—H. K. Mulford Co., Philadelphia.

Pituitary Extract—Lederle 20 Units—A slightly acid aqueous solution containing the water-soluble principle or principles of the fresh posterior lobe of the pituitary body of cattle, free from preservative. It is standardized to have twice the strength of solution of pituitary—U. S. P. X. For a discussion of action, uses and dosage, see New and Nonofficial Remedies, 1926, pp. 281 and 283. The product is supplied in 1 c.c. ampules. Lederle Antitoxin Laboratories, New York. (Jour. A. M. A., Aug. 4, 1926, p. 491).

Erysipelas Streptococcus Antitoxin.—An antitoxic serum prepared by immunizing animals against the toxin of the hemolytic streptococci of erysipelas. Reports have been published which indicate that the injection of erysipelas streptococcus antitoxin favorably affects the course of erysipelas.

Erysipelas Streptococcus Antitoxin—Mulford.—This antitoxic serum is obtained by injecting horses intradermally with strains of hemolytic streptococci isolated by H. Amoss from human cases of erysipelas lesions, bleeding the horses and when test bleedings show the serum to have reached the desired potency, separating the serum, sterilizing and preserving it. The product is marketed in 100 c.c. vials. H. K. Mulford Co., Philadelphia.

Oscodal.—A preparation of the nonsaponifiable fraction of cod liver oil, containing the antiophthalmic and antirachitic fat soluble vitamins. It has 500 times the antiophthalmic potency of cod liver oil when assayed by the method of the U S. P. for cod liver oil, and its antirachitic potency is such that 0.02 Gm. per day will initiate recalcification in the leg bones of young albino rats. Oscodal possesses properties similar to those of cod liver oil so far as these depend on the fat soluble vitamin content of the latter. Oscodal is supplied in tablets containing 0.02 Gm.—H. A. Metz Laboratories, Inc., New York.

Pituitary Substance—L. & F. Desiccated.—The pituitary gland of cattle, including the infundibulum and the anterior and posterior lobes, dried and powdered. For a discussion of the actions and uses, see Pituitary Gland, New and Non-official Remedies, 1926, p. 281. The product is also supplied in 1½ grain tablets. Lehn & Fink, Inc., New York.

Anterior Pituitary—L. & F. Desiccated.—The anterior lobe of the pituitary gland of cattle, dried and powdered. For a discussion of the actions and uses, see Pituitary Gland, New and Non-official Remedies, 1926, p. 281. The product is also supplied in 1 grain tablets.—Lehn & Fink, Inc., New York.

Posterior Pituitary—L. & F. Desiccated.—The posterior lobe of the pituitary gland of cattle, dried and powdered. For a discussion of the actions and uses, see Pituitary Gland, New and Non-official Remedies, 1926, p. 281. The product is also marketed in the form of 1/10 grain tablets. Lehn & Fink, Inc., New York.—(Jour. A. M. A , Aug. 28, 1926, p. 671).

PROPAGANDA FOR REFORM

Crystalline Tuberculin.—The isolation of a crystalline protein with tuberculin activity has been reported. The crystallized product elicits the characteristic skin reaction in tuberculous subjects. Chemically, it is shown that wherever the activity is lost, following enzyme treatment, there occurs also a corresponding reduction in whole protein, with an increase in proteose and residual nitrogen. (Jour. A. M. A., Aug. 7, 1926, p. 417).

Silver Protein Preparations.—At the request of the Council on Pharmacy and Chemistry, the A. M. A. Chemical Laboratory examined the silver protein preparations that had been found acceptable for New and Non-official Remedies in order to determine whether or not they complied with the standards of the U. S. Pharmacopeia X. The Laboratory reports that all of the specimens of the silver protein preparations both mild (Argyrol type) and strong (Protargol type), described in New and Non-official Remedies were found to comply with the new U. S. Pharmacopeia standards for these preparations. (Jour. A. M. A., Aug. 7, 1926, p. 430).

John Howland.—The Council on Pharmacy and Chemistry publishes an appreciation of John Howland. By the death of John Howland, the Council has sustained a great loss; for he was a member whose devoted services were much valued and whose contributions to the scientific progress of medicine have been outstanding. The members of the council mourn the loss of their colleague, and point to his services as an inspiration for all. (Jour. A. M. A., Aug. 14, 1926, p. 491).

Naftalan Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that Naftalan, according to the Ft. Dearborn Drug & Chemical Co., is manufactured by E. Stiewe, Madgeburg, Germany, and is "a preparation of Russian mineral oils containing about 4 per cent of soap, in the form of an ointment." The claims made for the preparation are closely similar to those which were formerly made in the exploitation of Ichthyol for various skin diseases. The Council found Naftalan unacceptable for New and Non-official Remedies because the information in regard to its composition is unsatisfactory and indefinite and because the therapeutic claims advanced for it are unwarranted.—(Jour. A. M. A., Aug. 14, 1926, p. 509).

Ray and Light Therapy in Otolaryngology.—Violet ray and quartz light therapy have not been scientifically established as of great value for conditions

of the nose and throat, as compared with the generally accepted medical treatment. With every new type of treatment, especially aloug the line of mechanical or physiotherapy, some investigators become overenthusiastic and report glowing results. As time elapses, it is found that most of these measures give some relief to a small percentage of patients but fail entirely in many others.—(Jour. A. M. A., Aug. 21, 1926, p. 607).

Preventive Inoculation Against Rabies.—In the use of antirabic inoculation, there is no especial advantage in the use of the treatment requiriug a considerable number of doses over that in which a smaller number are employed. Within receut years the killed virus has to a very considerable extent replaced the attenuated virus. A number of modifications of the Pasteur treatment are licensed by the Treasury Department and all are considered to be safe and effective. The duration of immunity in man after a series of antirabic injections is unknown, but it is generally advised that an exposure to rabies more than six months after a course of treatment should be followed by a new course of the prophylactic. (Jour. A. M. A., Aug. 21. 1926, p. 607).

Befsal.—Befsal is marketed under absurd and ludicrous claims. The claimed chemical composition of the product and the product itself both may be described as "crude."—(Jour. A. M. A., Aug. 21, 1926, p. 608).

The San-Gri-Na and Silph Chewing Gum Frauds.—"San-Gri-Na" was put out by the imposingly named "Scientific Research Laboratories" and "Madame Elaine." The laboratories were non-existent and so was "Madame Elaine." "Silph Chewing Gum" was sold by the "Silph Medical Company" and "Madame Claire." There was nothing medical about the company; there was no "Madame Claire." The San-Gri-Na fraud was analyzed in the A. M. A. Chemical Laboratory in 1924, and an article published on the subject in *The Journal* of November 22, of that year. One of the chief advertising assets of the San-Gri-Na fraud was a testimonial by Dr. J. J. Rudolph, 636 Garden Street, Hoboken, New Jersey. He is the same J. J. Rudolph, apparently, that exploited a quack cure for malaria a few years ago. The facts, as brought out by government investigation show that both San-Gri-Na and Silph Chewing Gum are enterprises of one W. E. Learned. Both San-Gri-Na and Silph Chewing Gum contained pokeroot, leptandrin, phenolphthalein and desiccated thyroid, and both, according to the government report, were made by the H. K. Mulford Company, of Philadelphia. In addition to these two obesity cure fakes, Learned had two subsidiary humbugs in the same line: "Dr. Folt's Reducing Soap," which the Federal chemists reported was an artificially colored soap made largely from palm oil or a similar fat, and containing a minute amount of iodine in the form of water soluble iodides, and "Sangra Salts," which was Epsom salt colored.—(Jour. A. M. A., Aug. 28, 1926, p. 688).

Spahlinger Treatment for Tuberculosis.—From time to time M. Spahlinger has given out enthusiastic reports from his Geneva Hospital. Because of the favorable newspaper comment, more particularly in England, concerning this product a report was made on it by the Science Committee of the British Medical Association. In the statement of this committee, published last spring, the history of the preparation was summarized and the committee strongly emphasized that it cannot endorse "this or any new method until after a full and independent test." The committee concluded that the remedy is secret and that the exact methods of preparation have never been fully published, and further, that no investigations carried out under strict experimental conditions which afford direct and convincing evidence of curative action have been published. (Jour. A. M. A., Aug. 28, 1926, p. 693).

Book Announcements

The Surgical Treatment of Goiter. By WILLARD BARTLETT, M. D., F. A. C. S., St. Louis. With Foreword by DR. CHARLES H. MAYO, Rochester, Miun. St. Louis. The C. V. Mosby Company. 1926. 8vo. of 365 pages, with 130 illustrations. Cloth, price, $8.50.

A Practice of Physiotherapy. By C. M. SAMPSON, M. D., Formerly of the Physiotherapy Service, Walter Reed U. S. Army General Hospital, Washington, D. C., etc. St. Louis. The C. V. Mosby Company. 1926. 8vo. of 620 pages with 146 illustrations. Cloth. Price, $10.00.

Practical Dietetics for Adults and Children in Health and Disease. By SANFORD BLUM, M. D., Head of Department of Pediatrics, and Director of the Research Laboratory, San Francisco Polyclinic and Post Graduate School. Second Revised Edition. Philadelphia. F. A. Davis Company, Publishers. 1926. 8vo. of 362 pages. Cloth. Price, $4.00 net.

Defective Memory, Absentmindedness and Their Treatment. By ARNOLD LORAND, M. D., Carlsbad, Czecho-Slovakia. Author of "Old Age Deferred," "Health Through Rational Diet," etc. Philadelphia. F. A. Davis Company, Publishers. 1926. 8vo. of 340 pages. Cloth. Price, $3.00 net.

Short Talks With Young Mothers on the Management of Infants and Young Children. By CHARLES GILMORE KERLEY, M. D., Formerly Professor of Diseases of Children, New York; Polyclinic Medical School and Hospital; Consulting Physician to various hospitals. Eighth Edition, Revised. G. P. Putnam's Sons, New York and London. The Knickerbocker Press. 1926. 300 pages. Cloth. Price, $1.50.

International Clinics. A Quarterly of Illustrated Clinical Lectures and Especially Prepared Original Articles on Medicine, Surgery and the Various Specialties. By Leading Members of the Medical Profession Throughout the World. Edited by HENRY W. CATTELL, M. D., Philadelphia, with COLLABORATORS. Volume III. Thirty-sixth Series. 1926. Philadelphia and London. J. B. Lippincott Company. 1926. 8vo. of 310 pages. Cloth.

Public Health Bulletins. No. 148 on **Mental Hygiene with Special Reference to the Migration of People.** No. 153 on **A Study of the Top Minnow** (Gambusia Holbrooki) **In Its Relation to Mosquito Control.** No. 154 on **Transactions of the Fifth Annual Conference of State Sanitary Engineers.** No. 155 on **The Course of Cancer Mortality in the Ten Original Registration States for the 21-Year Period, 1900-1920.**

All members of the Medical Society of Virginia are expected in Norfolk, October 12-15, 1926.

Virginia Medical Monthly

FOUNDED BY LANDON B. EDWARDS, M. D., APRIL, 1874.
OWNED BY THE MEDICAL SOCIETY OF VIRGINIA.
PUBLISHED BY THE PUBLISHING COMMITTEE.
A. G. BROWN, Jr., M. D., Chairman, Richmond, Va.
B. R. TUCKER, M. D., Richmond, Va.
P. W. HOWLE, M. D., Richmond, Va.
E. L. KENDIG, M. D. Victoria, Va.
A. L. GRAY, M. D., Richmond, Va.
ALEX. G. BROWN, Jr., M. D., Editor.
AGNES V. EDWARDS, Business Manager and Secretary-Treasurer.

All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $2.00 per annum in advance.
Single Copies 20c.

Vol. 53. OCTOBER, 1926 No. 7

Editorial

Chronic Arthritis.

The consideration of rheumatism for nearly two hundred years would seem time enough to agree upon a classification both as to etiologic and pathologic groupings. Sydenham, in 1633, separated rheumatism from gout. Rheumatism was distinguished from gout by its onset, its dietary etiology and its typical podagric manifestations. Rheumatism meant acute and chronic inflammation of joints that caused pain, swelling and distortion of the anatomical make-up of joints. Rheumatism has held unchallenged the right to joint diseases, although rheumatism is without meaning so far as a joint disease is concerned. The word in the Greek, meaning "a flux," is a misnomer when intended to describe a joint disease and should be dropped absolutely from the terminology of joint affections. One has only to recall the varied assortment of terms, with mixed meaning and manifest confusion, used in chronic joint diseases in order to see the force of this observation.

Chronic articular rheumatism describes one sort of arthritis today, while arthritis deformans, chronic rheumatic arthritis, rheumatoid arthritis, osteo-arthritis, and rheumatic joints, describes another and more complicated sort of joint disease. One must concede that few diseases have offered more baffling and difficult problems for solution. It has been extremely perplexing, both in the domain of etiology and pathology of chronic diseases of the joints, to reduce the etiologic factors to known quantities, and to arrange the cases pathologically in definite groups. This evident inability to assign causes to given joint pathology has been the apparent insuperable obstacle in bringing order out of confusion. Fortunately, within the last decade, a glimmer of light has been breaking upon the big question of etiology. The discovery of the relation of focal infections and chronic joint diseases was quite as epochal as the discovery of Sydenham that there was a difference between gout and rheumatism. This advance of our day, as brought forward by Dr. Frank Billings and his co-workers in Chicago, in the last decade, has done much to solve the causes of a large group of chronic joint cases and has influenced a new grouping of such cases. Chronic joint disease, however, offers many problems yet unsolved in the field of etiology, pathology, and treatment. It challenges scientific medicine today.

In view of the historical bearing of diseases of the joints to human efficiency and comfort, and in view of the widespread evidence of disordered joint function, one may consider with interest a paper which presents suggestions on the etiologic and pathologic grouping of chronic arthritic cases. The results of the study presented are gotten from a consideration of a large number of cases.

Based upon a study of 612 cases of chronic arthritis in the Cornell Clinic (Cornell Pay Clinic and Second Medical (Cornell) Division of Bellevue Hospital), Cecil and Archer, of New York, have presented this classification and have suggested methods of treatment in an article submitted at the Dallas session of the American Medical Association. This assortment of the 612 cases was made upon a plan of two pathologic groups, as followed by Nichols and Richardson, cited therein. Group one was termed "Proliferative," characterized by primary proliferative changes in synovial membrane and perichondrium. Group two was termed "Degenerative," characterized by primary degenerative changes in the cartilage. In this assorting of the 612 cases, 414 cases fell into the "proliferative," while 132 cases were placed in the "degenerative" group; the balance of the cases were miscellaneous and of undetermined causes. The proliferative chronic arthritic cases were thought to be frankly inflammatory in origin. The inflammation in the joints, affecting synovial and perichondrial tissues, were considered to be due to infection. There were 379 cases in

the proliferative group. These were described as cases of chronic infection arthritis. These cases were of focal infection origin. There were also eighteen patients who were called specific arthritics, while seventeen were arthritis deformans:—a chronic, progressive polyarthritis of unknown origin. Under degenerative chronic arthritis were placed 182 cases, with 145, "arthritis of menopause;" 20 cases, degenerative monarticular arthritis; and 17 cases, senile arthritis.

It appears that in this study a large proportion of the cases were of the focal infection type:—over half of the 612 cases were due to focal infection; a good percentage were due to specific infection (gonorrheal, tubercular and syphilitic). Eighteen cases were assigned to the type, called arthritis deformans. Of arthritis deformans, much is wanting in our knowledge of its pathogenesis. As a terminal change of joint structures, arthritis deformans assumes a grim reality of distortion and ankylosis. But of its initial or early changes much is lacking. So, this stage of joint change or type of pathology in joints is said to be of unknown origin. However, primary progressive polyarthritis, or "rheumatoid arthritis", or arthritis deformans, is characterized by steady progression, by some thought to be of an extremely aggravated sort of pathologic change implanted upon a preceding infection. The process is polyarthritic and atrophic.

Degenerative arthritis deserves special notice as these authors assigned a rather large number of the cases to an "arthritis of menopause." Arthritis of menopause, so-called, were next in frequency to arthritis due to infection. More than 25 per cent. or about 145 cases, of the series were assigned to this class. Females of considerable overweight, passing through the climacterium, showed, with insidious onset, evidence of stiffness of the knees, particularly noticeable upon bending or walking. Some cases showed changes of lumbar vertebrae, while some showed Heberden's nodes in distal phalangeal joints. The general appearance of the female at this age, showing this type of arthritis, was characteristic. The treatment suggested was: (1) reduction of weight by diet and metabolic stimulation: (2) the use of iodine and thyroid extract; (3) physical therapy; (4) colonic irrigations.

Degenerative monarticular arthritis, another group, were twenty in number, showing changes and symptoms in 16 cases in the hip; in two cases in the shoulder; and in two cases in the knee.

There appeared some doubt in this group as to whether or not focal infection had not played a part in the changes. These cases were treated with iodides and physio-therapy.

It is pertinent to this subject to comment here upon a paper by Young and Youmans, entitled "The Use of O-iodoxybenzoic Acid in the Treatment of Infectious Arthritis." O-iodoxybenzoic acid has been used since 1892. Germicidal action; production of "more antibodies than control animals;" stimulation of phagocytosis of streptococci and staphylococci by human leukocytes; stimulation of the production of hemolysin and agglutinin, are some of the items on the physiological action cited in a sketch of the drug. It seems to the authors that the favorable action is derived from an oxidizing substance.

The drug was used in the treatment of forty-three cases of arthritis. The disease was acute or sub-acute in four cases: in the remainder it was chronic, patients having had the disease from six months to ten years. Twenty-four were men and nineteen women. Two showed marked hypertrophic changes; a majority were considerably crippled and deformed.

The treatment, in brief, consisted in hospitalization and confinement in bed during the period of reaction from the drug. All chronic cases had had many therapeutic measures used, including physiotherapy, protein shock, removal of foci of infection and orthopedic measures. Young and Youmans employed no other treatment, except removal of foci of infection and some orthopedic measures in six. No special diet was used except for those underweight, when liberal diet was given.

The administration of the drug consisted in the following method: "One gram of the free acid was placed in a beaker containing 50 c.c. of sterile distilled water, to which ammonium hydroxide was carefully added until it was just alkaline to litmus. Sufficient sterile distilled water was then added to make a total volume of 100 c.c. * * * * It was

given at body temperature, intravenously, by gravity method over a period of not less than seven minutes."

The patient reacted with the following symptoms: (1) stinging sensation in the mucosa of the mouth and nose; (2) lacrimation and some sneezing; (3) nausea and vomiting (especially children); (4) fever preceded by chill, in fifteen minutes to an hour, after administration. Doses were administered bi weekly; eleven patients received six injections; thirteen, eight; seventeen, two or more courses. The results obtained were very good (markedly improved) in twenty-four; fair (moderately improved) in ten; slightly improved in six; no improvement in three. One patient, not included in the series, died after receiving the third injection. The paper reveals explanations for the untoward event, which occurred rarely.

This article is of interest and should be read with care, although the use of the remedy is not at all advised except in the hands of those experienced in its use. In fact, the drug was not on the market at that time. It was being supplied to various clinicians for study.

Colloidal Lead and Cancer.

Medical readers have followed with interest the work of Blair Bell, of Liverpool, since he announced his observations on lead in cancer. Wood's paper, before the Section on Pathology and Physiology at the seventy-seventh session of the American Medical Association,* is interesting and affords one an opportunity to read an excellent presentation of the development of colloidal metals in the treatment of malignant diseases in general, and of colloidal lead in particular. The paper may claim the attention of every practitioner because of the widespread interest in the cancer problem, as well as because the work of Blair Bell may offer a new opening in the therapy of malignancy heretofore closed. One can hardly fail to speculate with interest on some phases of the possibilities of this method in apparently hopeless and inoperable cases.

Blair Bell observed that, in his obstetric practice and in pregnant animals too, in poisoning by lead, elective action on trophoblastic cells, was noted. The thought that trophoblastic cells were biologically closely related to tumor cells suggested the possible successful treatment of human cancer with intravenous injection of colloidal lead. This was in 1920. After six years, using other colloidal metals as well, Bell selected colloidal lead because he found it to be less toxic to the patient. Quoting Wood, we note that the preparation used "is a Bredig colloid in 0.4 per cent aqueous gelatin with the addition of 0.027 per cent calcium chloride." The injection fluid received additional treatment before being used, which gave it a black or gray color. The product became toxic after two or three days and could not be used. Patients were selected. Patients with nephritis, obstructive jaundice, metastatic involvement of the brain, and extreme anemia were not given colloidal lead. In patients with large tumors, as much as possible of the tumor was surgically removed. Roentgen rays were used in connection wtth lead. Direct insertions by ionization into superficial growths were followed by some benefit.

Blair Bell used colloidal lead treatment on 227 patients with malignant tumors, with the result that fifty lived from one to five years in a completely arrested stage. It seems that a substance has been found that will arrest the growth of carcinoma for a period of one to five years and that in cases of inoperable carcinoma it may find a field of usefulness.

*J. A. M. A., Vol. 87, No. 10, beginning pg. 717.

Parathyroid Hormone.

Collip* says that parathyroid is related functionally to calcium and phosphorus metabolism. It may have other functions but this is the only proven one. A lowered calcium content of blood serum and, as a rule, an increase in inorganic phosphorus is found in experimental parathyroid tetany. In dogs, in parathyroid tetany, after injection of parathyroid hormone, the blood calcium level is restored, while inorganic phosphorus, if increased in this state, is decreased. With a disappearance of the clinical signs of tetany, there is an increase in blood calcium in proportion to the amount of the dose of parathyroid hormone.

Collip concludes that it is logical that "parathyroid hormone will be of definite therapeutic value in any condition in which the blood serum calcium is below normal." (1) Post-operative tetany, (2) spasmophilia, (3) tropical sprue, and (4) certain types of nephritis show lowered blood calcium and, so, would seem to be conditions in which parathyroid hormone is useful.

*J. A. M. A., Vol. 87, Sept. 18, 1926, pg. 908.

News Notes

On to Norfolk!

As you receive this issue of the MONTHLY, you should be packing your grip and be on the way to Norfolk. All members of the State Society should make every possible effort to attend this, our fifty-seventh, annual meeting. An excellent program has been arranged, and a good time is in store for all who are fortunate enough to be in Norfolk from October the 12th through the 15th. Dr. Israel Brown is chairman of the Committee on Arrangements. The program tells some of the things to expect.

We regret that in giving names of chairmen of the various local committees in the September issue, one name was overlooked—that of Dr. E. T. Hargrave as chairman of the Finance Committee. From what we can learn, Dr. Hargrave has secured fine results through his work on this very important committee.

Clinch Valley Medical Society Organized.

Upon invitation of the Wise County Medical Society, doctors residing in counties included in the Clinch River Valley met in Norton, September 22. Fifty-eight doctors representing the seven counties were present, besides a number of invited guests. Mayor F. W. Seidel, of Norton, delivered the address of welcome, to which Dr. Isaac Peirce, of Tazewell, responded. Papers were read by Dr. Francis H. Smith, Abingdon, and invited guests, Drs. E. G. Williams (State Health Commissioner), H. U. Stephenson and Frank S. Johns, all of Richmond.

Very impressive addresses were also given by Hon. John W. Chalkley, of Big Stone Gap, and Major Bolling H. Handy, chairman of the Industrial Commission.

The special object of this meeting was to discuss the formation of the Clinch Valley Medical Society, which plan was consummated, the following officers being elected: Dr. C. B. Bowyer, Stonega, president; Dr. J. M. Daugherty, Nickelsville, first vice-president, and Dr. J. C. Sutherland, Clintwood, secretary-treasurer.

Following the meeting, an elaborate dinner, complimentary to the Wise County Medical Society and its guests, was given by the Virginia Coal Operators' Association.

The Medical Association of the Valley of Virginia

Held its regular semi-annual meeting in Staunton, September 30th, with an attendance of about fifty doctors, Dr. P. W. Boyd, of Winchester, presiding. Several interesting papers were read and resolutions were passed on the death of Dr. M. P. Jones, of Churchville. The Association appointed a committee to put into operation a student loan fund, with Dr. M. J. Payne, Staunton, as chairman. Other members of this committee are Drs. C. E. Conrad, Harrisonburg, J. M. Emmett, Clifton Forge, and P. W. Boyd, Winchester. Dr. Hunter H. McGuire, Winchester, was appointed delegate from the Association to the State Society meeting.

Dr. A. F. Robertson, Staunton, for several years secretary of the Association, was elected its president; Drs. C. O. Dearmont, of White Post, J. H. Deyerle, of Harrisonburg, and G. S. Hartley, of Clifton Forge, vice-presidents; Dr. H. Gardner Middlekauff, Weyers Cave, secretary; and Dr. L. F. Hansbrough, of Front Royal, treasurer. It was decided to hold the next meeting at Clifton Forge, Va., in May, 1927.

Medical Director at Piedmont Sanatorium.

Dr. Cornelia W. Segar, who was acting medical director of Piedmont Sanatorium from the time of Dr. H. G. Carter's death, was appointed medical director of that institution at the regular meeting of the Hospital Board in the early summer. Dr. Segar graduated from Medical College of Virginia in 1923, following which she served an internship at Memorial, St. Philip's and Crippled Children's Hospital, Richmond. For several summers she worked at Piedmont Sanatorium and one year at Catawba Sanatorium. For nearly two years prior to Dr. Carter's death, she had been first assistant physician at Piedmont Sanatorium.

The Southside Virginia Medical Association

Held its regular quarterly meeting in Petersburg, September 14th, Dr. F. C. Rinker, of Norfolk, presiding. The attendance was excellent and a fine scientific program was presented. The feature of the meeting was the symposium on "The Kidney." Every phase of this organ, in health and disease, was discussed by men competent to handle the subject.

Upon close of the scientific meeting, the Association was given a splendid dinner at the Petersburg Country Club, after which they

adjourned to meet in Norfolk the second Tuesday in December. Dr. R. L. Raiford, Sedley, is secretary.

Mohonk Cancer Symposium.

A symposium on cancer control held at Lake Mohonk, N. Y., September 20-24, was attended by many European and American specialists. The purpose of the meeting was to consider the prevention and cure of cancer from a practical standpoint, and to express in concise language the fundamental ground work of fact and opinion upon which the collective effort now being made in the United States and other countries, for the control of cancer, should be continued and extended. This meeting was brought about by the Society for the Control of Cancer and twenty-seven carefully prepared papers on every phase of the cancer problem were presented. It is believed great good will be accomplished as the result of this meeting.

Dr. Edwin S. Woodyard,

Of the class of '25, Medical College of Virginia, after a year's internship in Brooklyn, has located at Pennsboro, West Virginia.

Dr. R. L. Mason,

Of Roanoke, Va., is spending several weeks in New York City, where he is taking postgraduate work.

The Clinical Congress of The American College of Surgeons

Will hold its annual meeting in Montreal, Canada, October 25-29, inclusive. Dr. Rudolph Matas, New Orleans, is president, Dr. Walter W. Chipman, Montreal, president-elect, and Dr. Franklin H. Martin, Chicago, director general.

Dr. John Ahouse,

Who has been engaged in public health work in West Virginia, since his graduation from Medical College of Virginia in 1925, is now taking a special course in pediatrics at the Willard Parker Hospital, New York City.

"A History of the Physician",

Which is said to be the first comprehensive history of the activities of the medical profession, as distinguished from a history of medicine, is being edited by Arthur Selwyn-Brown, Ph.D., LL.D., well known in the literary world, and is now being offered for advance sale at $15 a copy. The net proceeds are to be used for increasing the endowment fund for the Physicians' Home, and orders should be sent to The Physicians' Home, Inc., 22nd Floor, Times Building, New York, N. Y. This book is to be in five parts and will tell of primitive medicine and the medicine man, lives of great physicians, physicians who have contributed to modern specialization in medicine, the doctor in his various contacts with life, and will give the history of many distinguished American physicians.

Members of Town Council.

Drs. G. G. Crawford and H. T. Hopewell, of Strasburg, have been re-appointed as members of the Town Council of Strasburg, Va.

Dr. Bernard H. Kyle,

Lynchburg, Va., has been elected vice-commander of the Lynchburg Post, 16, of the American Legion, for the coming year.

Births in Virginia During 1925

Showed a total of 61,459, or a loss of 3,233 as compared with 1924. The highest birth rate was in mountain counties, Buchanan, Dickenson and Lee taking the lead. Radford had the highest birth rate of any of the cities.

Ground Broken for New Hospital.

At the meeting of the Central District Medical Society in Farmville, Va., the latter part of September, ground was broken for the Southside Community Hospital, Dr. Paulus A. Irving, president of the Society, turning the first spadeful of earth. The building will be erected near the western corporate limits of Farmville and will cost about $200,000 when completed. The erection of this hospital has been made possible by the Commonwealth Fund of New York and is for the use of the people in Prince Edward and the surrounding counties within a thirty-five mile radius. It will have fifty beds and will be modern and up-to-date in every respect.

Dr. Tom A. Williams,

Formerly of Washington, D. C., but for the past year of Miami, Fla., escaped injury in the recent Florida storm, although his automobile was demolished.

Dr. G. H. Musgrave,

Who has been director of the Henrico County health unit, with headquarters at Richmond, left early this month for Leesburg, Va., where he will engage in private practice.

Dr. P. W. Boyd,

Winchester, Va., had a narrow escape from drowning, last month, when fording a mountain stream in western Shenandoah County. The stream was greatly swollen as a result of a hard rain, and when his automobile was

washed down stream for some distance, Dr. Boyd had to get out and swim for the bank.

Members of Prince Edward County Health Board.

Drs. Thos. G. Hardy, Farmville, and Joseph F. Alsop, Prospect, were last month appointed members of the Prince Edward County (Va.) Health Board.

Home From Vacations.

Some of the Virginia doctors who enjoyed late vacations are as follows:

Dr. Joseph A. Rucker, Bedford, arrived home the middle of September from a delightful three months' trip to the Holy Land, Egypt and on the European continent.

Dr. and Mrs. J. W. Hannabass, Richmond, spent some time at Mountain Lake, Va.

Dr. and Mrs. W. C. Caudill, Pearisburg, were recent visitors in Richmond.

Dr. and Mrs. C. V. Montgomery, South Hill, also recently visited Richmond.

Dr. and Mrs. H. W. Porter, Louisa, took a motor trip in September to Atlantic City, Philadelphia and other places of interest in the North.

Dr. and Mrs. G. Chambers Woodson and son returned to their home in Richmond the middle of September after a motor trip, which included a visit to several northern cities and through the Valley of Virginia.

Dr. R. H. Pretlow, Suffolk, was in Richmond, last month, to attend the reunion of the alumni of McCabe's school.

Dr. and Mrs. A. C. Swimley, Winchester, spent a vacation at White Sulphur Springs, W. Va.

Dr. Rachael F. Weems has returned to her work as physician at the State Teachers' College at Harrisonburg, Va., after a visit to her former home in Ashland, Va.

Dr. Maurice M. Lynch, of the class of '25, Medical College of Virginia, has been on a visit to his parents in Winchester, Va. He is now serving an internship at the hospital in Teaneck, N. J.

Dr. P. E. Tucker has returned to his home at Buckinghom, Va., after attending the Medical Officers' Training Camp at Fort Eustis, Va.

Dr. A. W. Kelly,

Of the class of '26, Medical College of Virginia, an intern at Mercy Hospital, Baltimore, has been very ill with typhoid fever but is reported as improved as we go to press.

The Southern Medical Association

Will meet in Atlanta, Ga., November 15, 16, 17 and 18, for the third time in its history. The last meeting in that city was in 1916. Dr. C. C. Bass, New Orleans, is president. The attractions of Atlanta as a convention city are so well known, that all members should make an effort to attend. An interesting program is being arranged. Any special information may be obtained from the Association's headquarters at Empire Building, Birmingham, Ala.

Wytheville (Va.) to Have New Hotel.

It will be of interest to our readers to know that Wytheville is to have a new hotel, and that Dr. J. T. Graham, of that city, president of the Chamber of Commerce of Wytheville, was chairman of the Executive Committee on the financing program for this project.

Children Much the Same the World Over.

Individual differences in great numbers but very little difference in the curve of intelligence scores as between races and nationalities were revealed in a series of psychological tests of children of immigrant families detained at Ellis Island. Twenty-five nationalities were represented. The tests, according to Bertha M. Boody, executive secretary of the Y. W. C. A., of New York, showed little variation from results of similar studios of unselected groups of American children.

Child Labor Law Violations Decreasing in Wisconsin.

Improvement in enforcement of the Wisconsin child Labor law is shown by the report of the Industrial Commission of Winsconsin for 1925 of the payment of triple compensation indemnity under the accident compensation law by employers in fifty-seven cases involving child labor law violations as against corresponding figures of eighty-seven cases in 1924 and sixty-nine in 1923. Fifty of the children for whom increased compensation was paid in 1925 were employed without labor permits and the remainder in occupations prohibited by law. The total amount of extra compensation paid in 1925 was $11,596.39, of which one employer alone paid more than $5,500.

Dr. W. R. King,

Formerly of Tennessee, is now health officer of Sussex County, Virginia, *vice* Dr. D. B. Lepper who resigned last Spring to accept

the position as health officer of Bluefield, West Virginia.

Dr. C. C. Coleman,

Richmond, Va., recently addressed the Fayette County, W. Va., Medical Society, at Oak Hill, W. Va., his subject being "Brain Tumors."

Dr. D. L. Elder

Was re-elected mayor of Hopewell, Va., for a term of two years, effective September 1.

Dr. J. L. Early,

After being in Saltville, Va., for over twenty years, has resigned as head of the medical staff of the Mathieson Hospital, in that place, the resignation to be effective the middle of October. He will move to one of the cities in Southwestern Virginia where he will engage in general practice.

Research on Surgical Supplies.

According to Dr. E. R. Weidlein, Director, Mellon Institute of Industrial Research, University of Pittsburgh, the firm of Johnson & Johnson, manufacturer of surgical supplies, New Brunswick, N. J., has established at the Institute a Fellowship that will study the exact requirements of surgeons and other medical specialists in the way of sundries, with the joint aim of developing new supplies that are needed and of standardizing the products now in use. An investigation will also be made of the processes of renovating used supplies, and several other Industrial Fellowships of the Institute will co-operate in devising satisfactory procedures.

Dr. Frederic H. Slayton (M. D., Rush Medical College) will be in direct charge of this comprehensive research. The Fellowship will be operated in a totally unbiased and independent manner, in accordance with the Mellon Institute system, and all its investigations will be conducted primarily for the benefit of the public. It is the plan to report the results in appropriate periodicals as the various phases of the studies are concluded.

In carrying on this work, Dr. Slayton and the Institute's Executive Staff invite the concurrence of all interested organizations. They are especially desirous of securing the close collaboration of hospital executives and of members of the medical profession.

Dr. John B. Wright,

Raleigh, N. C., an alumnus of the former University College of Medicine, Richmond, Va., has been appointed a member of the North Carolina State Board of Health, to succeed the late Dr. Richard H. Lewis, with whom he was for sometime associated in practice.

Dr. W. A. Shepherd,

Richmond, is out again, after undergoing an operation in a local hospital.

The Gill Memorial Eye, Ear and Throat Hospital,

The private hospital of Dr. E. G. Gill, was opened in Roanoke, Va., July the 1st. The building is fireproof, consists of four stories with twenty rooms, and is especially designed and equipped for the treatment of diseases of the eye, ear, nose and throat. It has departments of opththalmology, oto-laryngology, bronchoscopy and esophagoscopy, and facio-maxillary surgery. A complete laboratory and X-ray are included in the equipment. Only graduate nurses are in attendance. Dr. Charles A. Young, of Roanoke, is associated with Dr. Gill.

Mothers' Pensions in Buffalo.

Fifty families, with the aid of mother's pensions, lived on an average of $924.68 a year during the five-year period 1920-1924, in Buffalo, New York, according to records of the Erie County Board of Child Welfare. The per capita expenditure was $194.26. These 50 families comprised 238 individuals, including 188 children of whom only 13 were over 16 years of age.

Broadcast over Radio.

Miss Sudie Jones, young daughter of Dr. and Mrs. Clarence Porter Jones, of Newport News, Va., and talented violinist, was one of the Newport News artists who broadcast over WRVA, Richmond, on the evening of September 30th.

Dr. E. J. Nixon,

Petersburg, Va., has just been appointed chairman of the child welfare committee of the American Legion, Virginia department.

Narrow Escape in Automobile Accident.

Dr. S. S. Gale, Roanoke, Va., had a narrow escape from death, September 5th, near Pulaski, due to the fact that his left rear tire blew out and threw his automobile into a fence. Several of the planks came through the wind shield. One struck and shattered the steering wheel, and another struck Dr. Gale in the upper part of the chest, fracturing his clavicle and two upper ribs. He was taken

to the Pulaski Hospital, where he was confined to bed for some days.

New York State Birth Registration.

New York has rolled up a birth-registration record 98.8 per cent perfect for the State and 100 per cent complete in 10 counties, according to the Census Bureau check upon birth registration in the State based on births during August, September, and October, 1925, in 29 counties.

New World Record for Lowest Infant Mortality Rate, New Zealand.

New Zealand has still further lowered her world-record infant mortality rate, according to vital statistics of the Dominion for 1925 which report a figure of 39.96 per 1,000 live births as compared with 40 in 1924. In some of the large cities the rate was even lower, that for Dunedin being 33 and for Wellington 35. The provisional United States rate for 1925 was 72.

Children,

The Magazine for Parents, made its initial appearance with the October issue and will appear monthly. This magazine, according to the president of the Parents' Publishing Association, of New York, under whose auspices it is published, "will have no propaganda purpose, being dedicated solely to mothers and fathers, for the sake of a new generation of normal, intelligent and healthy children. In this it will have the active co-operation of the leading educational and child welfore agencies, private, public and governmental."

Dr. H. Hartwell Bass,

Formerly of Henderson, N. C., after being associated with Dr. Wm. L. Clark, in Philadelphia for the past eighteen months, has located in Durham, N. C., with offices in the Piedmont Building. His practice will be limited to general surgery and the treatment of neoplastic and allied diseases by the combined methods of operative surgery, radium, X-ray and electrothermic measures. Dr. Bass has done special work in this line in New York, Philadelphia and Pittsburgh.

Married.

Dr. Hunter B. Spencer, of Lynchburg, Va., and Miss Kathleen E. Root, of Richmond, September 8.

Dr. Oscar Swineford, Jr., Richmond, and Mrs. Agatha Gay Johnston, Charlottesville, Va., August 28, in New York City. Dr. Swineford graduated in medicine last June, from the University of Virginia, at which time he accepted an appointment as intern at the Massachusetts General Hospital, Boston.

The Medical College of Virginia,

Richmond, announces that it opened this year with the largest enrollment in the history of the institution, approximately six hundred. Owing to insufficient facilities, admission had to be denied to hundreds of students in the various departments. It is hoped that the new buildings made possible by the fund-raising campaign last Spring will eventually provide laboratory and other accommodations for those desiring to enter this college.

Dr. Charles W. Putney,

Staunton, Va., left early this month for Philadelphia, where he will enter the regular course in surgery in the Graduate School of Medicine of the University of Pennsylvania, for the purpose of specializing in this branch.

Major Allen J. Black, M. C.,

Formerly of Virginia, but now with the medical corps of the U. S. Army, after a few months at Camp Devens, Mass., has returned to Fort Andrews, Mass.

U. S. Civil Service Examinations.

The U. S. Civil Service Commission, Washington, D. C., announces open competitive examinations for physiotherapy aide, physiotherapy pupil aide, and physiotherapy assistant. Applications for these positions must be on file at Washington, D. C., not later than November 27, 1926.

Dr. Fred M. Hodges,

Richmond, who has been quite sick at a local hospital, is now much improved.

Travel Study Club of American Physicians.

At the completion of its recent European Study Tour, the Travel Study Club of American Physicians elected Dr. Fred H. Albee, of New York, as President, Drs. Edward B. Heckel, of Pittsburgh, and John P. Lord, of Omaha, as Vice-Presidents, and Dr. Richard Kovacs, of New York, as Secretary.

Plans are being prepared for the next study trip, including the Central European countries: Germany, Austria, Czechoslovakia, Hungary and Italy.

Addition Being Made to Winchester Hospital.

The Winchester (Va.) Memorial Hospital is in the midst of making an addition which it is expected will be completed about the first of the coming year. The capacity of the hospital will then be increased to 109 beds.

Investigations Being Made on Chlorine Gassing.

The Board of Medical Officers appointed by the Director of the U. S. Veterans Bureau to study the residual effects of war gas expects to complete its studies of chlorine gassing by the first of the year.

The Board which held its first meeting March 9, 1926, is composed of Dr. Allen K. Krause, Member of the Group on Investigation and Research of the Medical Council of the U. S. Veterans Bureau and Associate Professor of Medicine at Johns Hopkins University; Lt. Col. Harry L. Gilchrist, M. C., U. S. A., Chief of Research Division, Chemical Warfare Service, U. S. A., and Dr. Philip B. Matz, Chief, Medical Research Sub-division, U. S. Veterans' Bureau.

Records show that approximately 70,000 men were gas casualties of varying degrees of severity during the war, 1843 of which were from chlorine gas. The War Department has made an investigation of the immediate effects of chlorine gassing in over 800 cases, and the present study by the Veterans' Bureau is expected to develop important information pertaining to the residual effects of this gas.

Upon completion of their investigation of chlorine gassing, the Board will commence a survey of the cases resulting from phosgene, mustard and other gases.

Mr. Aubrey H. Straus,

Director of the Laboratories of the Virginia State Board of Health, returned the last of September from a three weeks' visit to the Public Health Laboratories in New York and Albany, N. Y., Boston, Mass., Lansing, Mich., and Washington, D. C. This trip was taken under the auspices of the International Health Board for the purpose of observing anything new in laboratory work.

The State Colony for Epileptics and Feeble-minded

Has just issued its annual report for the year ending June 30, 1926. This report, the first full year under the superintendency of Dr. J. H. Bell, shows a continuance of the excellent work done by Dr. A. S. Priddy. The general health of the patients has been good and improvements are constantly being made at the plant. On July 1, 1925, there was a total on the register of 941 patients, with 809 actually domiciled at the Colony. At the close of the year, there were 850 on the register, with 767 actually in the institution.

The National Committee for the Prevention of Blindness,

In its annual report shows a membership of 16,000, which is an increase of 6,000 over the preceding year. During the past year, the Committee conducted what is believed to be America's first pre-school eye clinic, which showed 50 per cent of those attending the clinic (all under seven years of age) with some eye ailment.

It is of interest to note that admissions to the schools for the blind, last year, showed only 11.5 per cent of the pupils had been blinded by ophthalmia neonatorum, whereas, when the Commitee was organized eleven years ago, 28 per cent of admissions were from this cause.

A great deal of excellent work has been done by this Committee.

Dr. C. L. Outland,

Recently chief health officer of Greenville, N. C., entered upon his duties as chief medical inspector of the Bureau of Health of Richmond, Va., the first of this month. He succeeded Dr. B. B. Bagby, who resigned to accept the position of health officer of Athens, Ga.

Second Unit of Hospital Opened.

The second unit of the Virginia Baptist Hospital at Lynchburg, Va., was opened the middle of September. The new building which is the gift of Mrs. Annie C. Mundy, has fifty-two single beds, twelve of which have been furnished as memorials. The hospital now has a total of 106 beds.

Dr. Margaret Nolting

Has been appointed instructor in physiology and hygiene and examining physician of Westhampton College, Richmond, Va., succeeding Dr. Margaret Kuyk, resigned.

Dr. Horace L. Goodman,

Formerly surgeon at Miners' Hospital at McKendree, W. Va., recently bought and took charge of the Greenbrier Valley Hospital, at Ronceverte, Va. Dr. Goodman has many friends in this State, being an alumnus of the Medical College of Virginia in the class of '01.

Dr. B. R. Caldwell,

Formerly of Virginia, but for sometime Senior Surgeon and Clinical Director of the U. S. Veterans' Hospital at Fort Bayard, N.

Mex., has been transferred to the same position with the U. S. Veterans' Hospital at West Haven, Conn.

Dr. J. M. Biedler,

After an absence of eleven months in Florida, has resumed his practice in Harrisonburg, Va.

Dr. Richard B. Davis

Has been appointed chief surgeon and superintendent of the Wesley Long Hospital, Greensboro, N. C., to continue the operation of the hospital of the late Dr. John W. Long. Dr. Davis, who graduated from Medical College of Virginia in 1915, practiced for several years in Weeksville, N. C. Since then he has seen service in the United States Army and spent two years in post-graduate surgery at the University of Pennsylvania.

The Wesley Long Hospital expects to open a 25-room, fire-proof annex about the first of November.

For Sale.

Large house recently put in excellent condition, with signal lights at each bed space and other improvements for a high class sanatorium. One acre of land for additions; no restrictions. Attractively surrounded by large trees and magnificent shrubbery, making it very seclusive. Situated in the exclusive section of Richmond's most fashionable suburb; one-half block from car line; city conveniences.

Unusual opportunity for physician desiring to specialize and care for mental cases, drug cases and general medicine. Good locality for physician. Only one in a large growing territory. Space for offices on main road.

Address Richmond Trust Company, Main at Seventh Street, Richmond, Va. (Adv.)

Location Wanted.

Middle aged married physician desires to locate in a town with good surrounding country, where an energetic active doctor can be assured a good living. Please give full particulars. Information leading to such an opening will be very much appreciated. Address "Doctor", care this journal. (Adv.)

Doctor Wanted

To take over practice and completely equipped drug store of recently deceased physician at Claremont, on the James River, Surry County, Virginia. Will sell or rent store building and adjoining residence, if desired. Price and terms resaonable. Moderate climate, good schools and improved roads. Excellent opportunity for comfortable town and rural practice.

For particulars, address P. O. Box 1535, Richmond, Va. (Adv.)

Obituary

Dr. William Joseph Jones,

Beloved physician and Confederate veteran, died at his home at Crozet, Va., September 15th, after several months of failing health. Dr. Jones was a native of Albemarle County, Va., and eighty-five years of age. While attending the University of Virginia at the outbreak of the War between the States, Dr. Jones enlisted and served as a surgeon in the Confederate service. Upon the close of the war, he resumed his studies at the University, and graduated in the class of 1866. He had lived at Crozet for a number of years and had been a member of the Medical Society of Virginia since 1871. He is survived by several daughters, grandchildren and great grandchildren.

Dr. Morand Lee Stallard,

Of Appalachia, Va., died of cerebral hemorrhage at a Louisville, Ky., hospital, August 4, aged fifty-nine years. He was buried at his former home at Dryden, Va. Dr. Stallard, who was a member of the Medical Society of Virginia, had been in active practice in Wise County, Virginia, longer than any other physician in the county.

Dr. Eugene Pendleton,

Of Cuckoo, Va., died at a Richmond hospital, September 9th, after an illness of several months. He was seventy-five years of age and graduated in medicine from the University of Maryland in 1871. For most of the time since, he had practiced his profession in Louisa County where he had won for himself a host of friends. He was at one time a member of the Medical Society of Virginia. Dr. Pendleton is survived by his wife, a daughter and two sons, one of them being Dr. E. Barbour Pendleton, of Cuckoo.

Dr. W. W. Rhudy,

Recently of Booneville, Ind., died at his former home, Rural Retreat, Va., September 3. He was fifty-five years of age and had graduated in medicine from the Medical College of Virginia, Richmond, in 1895. He was at one time a member of the Medical Society of Virginia.

IN REPLACEMENT THERAPY

PARA-THOR-MONE, LILLY

An Active Hormone of the Parathyroid Gland, Parathyroid Extract, Collip Biologically Standardized

ILETIN (INSULIN, LILLY)

The First Preparation of Insulin Commercially Available in the United States; Time Tried, Pure Stable, Uniform

PITUITARY EXTRACT, LILLY

The Posterior Lobe Principle in a State of Purity Heretofore Unobtainable Commercially Standardized; Retains its Potency Indefinitely

Physicians' Inquiries Invited

ELI LILLY AND COMPANY

Research and Producing Chemists

INDIANAPOLIS, U. S. A.

ESTABLISHED 1876

Capital $1,000,000 Surplus Earned $1,500,000

ESTABLISHED 1892

To act as Executor, Guardian and Trustee

$30,000,000

of investments held in Trust

Confidential Interviews Invited.

THE JEFFERSON

The Jefferson

RICHMOND, VA.

EUROPEAN PLAN.

Ideally situated in the most desirable section of Richmond and within five minutes walk of the business center and shopping district.

400 ROOMS—300 BATHS.

Every comfort for the tourist. Every convenience for the traveling man. Rooms single and en suite. Turkish and Roman Baths. Spacious sample rooms.

O. F. WEISIGER, Manager.

THIS SPACE RESERVED FOR

MURPHY'S HOTEL

8TH AND BROAD STREETS

RICHMOND, VA.

The Largest and Most Distinctive Hotel in Virginia

RATES REASONABLE

SERVICE UNEXCELLED

JAS. T. DISNEY President and Manager

Hotel Richmond

300 Rooms, Fireproof,

Overlooking Capitol Park

In Center of Business and Amusements

HOTEL RICHMOND REALTY CORP.

Owners

W. E. Hockett, Manager

THE N. Y. ACADEMY OF MEDICINE
NOV 18 1926
LIBRARY

Virginia Medical Monthly

OFFICIAL ORGAN OF THE MEDICAL SOCIETY OF VIRGINIA

Vol. 53, No. 8.
WHOLE No. 893.

RICHMOND, VA., NOVEMBER, 1926

$2.00 A YEAR
20 CENTS A COPY

CONTENTS.

ORIGINAL COMMUNICATIONS:
John Peter Mettauer, A. M., M. D., LL.D.,—A Country Surgeon. W. L. Harris, M. D., Norfolk, Va. 485
The Physician and the Pharmacist. Wortley F. Rudd, M. A., Richmond, Va. 490
Diseases of Middle Life—Can We Prevent Them? M. O. Burke, M. D., Richmond, Va. 492
The Surgical Management of Handicapped Toxic Goiter Patients—With Illustrative Cases. Linwood D. Keyser, M. D., Roanoke, Va. 493
The Value of the History in the Diagnosis of Pulmonary Tuberculosis. Phil H. Neal, M. D., Catawba Sanatorium, Va. 496
The Value of Studying the Renal Tracts as an Aid to Correct Diagnosis of Acute and Chronic Diseases of the Abdomen. B. E. Rhudy, M. D., Abingdon, Va. 499
Vitamins, Radiation and Rickets in the Temperate Zone. St. George T. Grinnan, M. D., Richmond, Va. 500
Novasurol as a Diuretic in Cases of Edema. W. P. Argy, B. S., M. D., Washington, D. C. 504
The Correlation of X-Ray Findings and Clinical Findings, Especially in Diseases of the Chest. Wilbur M. Phelps, M. D., Staunton, Va. 507
Treatment of Incipient Cataract. Hunter H. McGuire, M. D., Winchester, Va. 511
Fracture of the Skull and Unilateral Optic Atrophy. V. K. Hart, M. D., Stateville, N. C. 514
The Hypoplastic Tendency in Gynecology. Robert Young Sullivan, M. D., F. A. C. S., Washington, D. C. 516
The Surgical Aspect in Gynecology. Gilbert Franklin Douglas, M. D., Birmingham, Ala. 519
CLINICAL REPORTS:
A Case of Cancer of the Stomach in a Man 73 Years of Age, With Partial Gastrectomy Under Local Anesthesia. J. Shelton Horsley, M. D., Richmond, Va. 523
Hilus Pneumonia. M. J. Payne, M. D., Staunton, Va. 525
PROCEEDINGS OF SOCIETIES 526
MISCELLANEOUS 540
ANALYSES, SELECTIONS, ETC. 542
THE TRUTH ABOUT MEDICINE 543
EDITORIAL 544
NEWS NOTES 547
OBITUARY 556

INDEX OF ADVERTISERS—Advertising Page 5.

Dosage is Important

TO obtain the full benefit of creosote medication in tuberculosis and bronchitis the dose must be sufficiently large.

This is what makes Calcreose so valuable

Calcreose practically eliminates the possible disturbing effects of plain creosote thus making it feasible to give large doses of this valuable drug over long periods of time and insuring therapeutic effect.

Whenever you want the stimulating expectorant effect of creosote use Calcreose.

CALCREOSE is a loose chemical combination of creosote and hydrated calcium oxide. It represents about 50% creosote in tablet form. It is easily administered and particularly suitable as an adjunct to other remedial measures.

POWDER — TABLETS — SOLUTION

Samples of tablets and catalogue on request

THE MALTBIE CHEMICAL CO. NEWARK, N. J.

Calcreose

MEAD'S POWDERED MILKS

MEAD'S POWDERED MILKS are prepared exclusively for Infant Feeding, with that purpose *only* in view. They are not advertised in any of the lay magazines. No descriptive literature of any nature regarding these milks is furnished except to physicians.

MEAD'S POWDERED MILKS are produced under the best dairying conditions, from milk of tuberculin-tested cows. The milk is properly handled and powdered within a few hours after milking.

Every lot of MEAD'S POWDERED MILKS is bacteriologically tested. A complete check from source to the sealed container is constantly maintained.

Furnished to Physicians as follows:

MEAD'S POWDERED WHOLE MILK
MEAD'S POWDERED HALF SKIM MILK
MEAD'S POWDERED LACTIC ACID MILK CULTURED
MEAD'S POWDERED LACTIC ACID MILK
ACIDULATED WITH U.S.P. LACTIC ACID
MEAD'S POWDERED PROTEIN MILK
MEAD'S CASEC (A Calcium Caseinate Product made from Milk)

We should appreciate it if the physician would make known his requirements in order that we may be enabled to send him sufficient quantities for clinical trial.

The Mead Johnson Policy

MEAD'S Infant Diet Materials are advertised only to physicians. No feeding directions accompany trade packages. Information in regard to feeding is supplied to the mother by written instructions from her doctor, who changes the feedings from time to time to meet the nutritional requirements of the growing infant. Literature furnished only to physicians.

MEAD JOHNSON & COMPANY

EVANSVILLE, INDIANA, U.S.A.

Manufacturers of Infant Diet Materials Exclusively

Virginia Medical Monthly

Official Organ of the Medical Society of Virginia

Vol. 53, No. 8.
WHOLE No. 893.

RICHMOND, VA., NOVEMBER, 1926

20 CENTS A COPY
$2.00 A YEAR

Original Communications

JOHN PETER METTAUER, A. M., M. D., LL.D.,—A COUNTRY SURGEON.*

By W. L. HARRIS, M. D., Norfolk, Va.
President, Medical Society of Virginia.

The art of living has always been man's preoccupation and has afforded him constant and unlimited interest. This interest is increased by the opportunity he has of looking into the past and of learning how others have "turned the trick" called living. Biography has now reached a high degree of development; this is the best proof that man is unable to build his life on the present alone or the hope of the future. He must still refer to the past for stimulation and encouragement. So it is in medicine, and I am assuming that you will bear with me while I am giving you something of the life of a man whose name is not written on the scrolls of fame, but who, nevertheless, was one of the master surgeons of America one hundred years ago.

After the battle of Yorktown, Lafayette's command was quartered in various parts of Virginia. One regiment was sent to Prince Edward County; and attached to this regiment was one gallant young French surgeon by the name of Francis Joseph Mettauer. He was so fascinated by the rural life in Virginia and the opportunity it offered for a physician who wanted to work, it did not require much persuasion for him to decide to remain when the troops embarked for home. He later married Eliza Gaulding, and to them was born, in 1787, a son, John Peter Mettauer, the subject of this brief sketch.

Nothing specially is recorded of the early life of young Mettauer other than the fact that he was a diligent student. He was reared in an atmosphere of culture and refinement, in a neighborhood inhabited by some of the best people in Virginia, such as the Johnsons, Egglestons, Henrys, Lawsons, Randolphs, Morrisons, Atkinsons, Venables, and many others of equal note. He was sent early to the neighboring college of Hampden-Sidney, and received his A. B. degree there in 1806, when only nineteen years of age. He proceeded at once to the University of Pennsylvania, and received his M. D. degree in 1809. Young Mettauer studied medicine under the most favorable conditions obtainable in America at that time. The medical department of the University of Pennsylvania was founded in 1791, and it had as professors some of the best trained and most brilliant men of the profession of that date, such as Rush, Physick, William Shippen, Jr., Wistar, and others, and the influence of these men, no doubt, had a wonderful bearing upon young Mettauer's subsequent career. Young Mettauer took advantage of his opportunities while at college, and soon attracted attention by his diligent and studious habits. After his graduation one of his teachers, Dr. Wistar, congratulated him upon the excellence of his examination and said, "My young friend, you have the means of success in your hands. Keep up your studious habits and nothing but sickness or early death can disappoint you." So it will be seen that young Mettauer was launched into his life work with every equipment necessary for success.

He had one brother, Francis Joseph, Jr., who graduated in medicine at the University of Pennsylvania in 1811, and located in Petersburg, Virginia.

When young Mettauer returned to his native county, his father was still enjoying a large and lucrative practice. Young Mettauer had the enthusiasm of youth and a wonderful equipment for those times, so it is easy to fancy what a help he must have been to his father. He had been in practice only about three years when his father died, in January, 1812, leaving him heir to a large practice, and a joint heir to a very comfortable estate. The war of 1812 was declared about this time. Anxious for an opportunity for service to his country and the experience that he thought the war might afford, he came to Norfolk in 1812, and was located here for two years. Well trained physicians were scarce in those days, and disease was rampant, so Mettauer found just what he was looking for, namely,

*Address of the President before the fifty-seventh annual meeting of the Medical Society of Virginia, at Norfolk, Va., October 12-15, 1926.

work. Some of his papers refer to the great amount of work he did here—"Up at 6 A. M. and worked continuously till midnight." However, he must not have worked all the time, for he found time to woo and win his first bride, who was Miss Woodard of this city. After the war he returned to his native county and settled down to what was destined to be his life work. He soon demonstrated the type of man he was; his work grew by leaps and bounds, and it was not long before he was a very busy man. He, of course, had to do general work in the country, but his most brilliant work was in the line of surgery.

He soon began to attract attention, not only by his brilliant surgery, but by his writings, and it was not long before his fame began to spread through the adjoining counties, and subsequently throughout the south and the whole nation. Patients began to come to him in ever increasing numbers from a distance, and as he had no hospital at that time, he had to utilize the inns and taverns both at Prince Edward Courthouse and at Kingsville, a cross road village about a mile from his home, and in Farmville, six miles away, to accommodate his patients. Practically all of the better class of private homes in the neighborhood at times also helped to house his patients.

A college course in the first half of the 19th century was expensive, and not obligatory. To have "read medicine with a doctor" was all that the law required for the granting of a license to practice medicine. In a doctor's office there were usually one or more students whom the doctor taught what he knew to the best of his ability; what they learned depended upon their own. Dr. Mettauer's fame soon began to attract so many students that they became almost a burden to him. To have been in close contact with a man of Dr. Mettauer's type was indeed an inspiration to any much in earnest student, and no doubt they vied with each other in making themselves useful in attendance to every minor and routine service in connection with Dr. Mettauer's ever increasing practice.

In 1835, Washington Medical School of Baltimore (incorporated in 1827, amalgamated with the College of Physicians and Surgeons 1877, which in turn was later, 1916, amalgamated with the University of Maryland), a new and growing school, offered the chair of surgery to Dr. Mettauer, and he accepted this and taught there for two years, resigning in 1837, and returned to his native county. Think of a progressive medical college in a large city going out into the remote country to find a professor of surgery! It shows clearly how he was regarded in those days. It is not recorded why he resigned, and his resigning would naturally surprise you, for it would seem that this was just such an opportunity as a man of Dr. Mettauer's type might have been looking for. It could hardly have been because he failed to give satisfaction to the school, for he was not only a profound student of medicine, but also a brilliant operator as well as a wonderful teacher. Perhaps he did not like the way they did things in Baltimore, for as we shall see further on, he was not only a very sensitive man, but very pronounced in his likes and dislikes. He would tolerate no nonsense. Perhaps he was lonesome for the country, or perhaps he concluded that the city was no place in which to bring up a family. He was a widower when he went to Baltimore, but he was not so busy while there that he could not find time to become interested in finding another wife. He married a charming woman from Connecticut and returned to his native state and county and located there for life. He was never happy away from his native county.

Soon after he returned from Baltimore, he determined to formulate his ever increasing number of students into a teaching unit, and called it the "Prince Edward Medical Institute." There were few medical schools in the country at that time, and only three in the south, so this little school was not formed for profit, or through personal vanity, but simply to serve the cause of humanity. The country needed trained doctors, and if he could assist in supplying these, even in a very modest way, he was willing to undertake this extra burden of teaching. He would not even call it the Mettauer Institute, which would have been only natural, but preferred to be loyal to his old county, and called it the "Prince Edward Medical Institute." He worried along with this Institute single-handed, doing all the teaching himself until his two sons, Francis Joseph and Henry Archer, graduated and joined the teaching staff. In 1847, Dr. Mettauer made overtures to Randolph-Macon College (located at that time at Boydton, Va., fifty miles away) to take over the Institute, which was done, with the understanding that this medical department might be moved to

Norfolk or Petersburg at some future time if thought desirable. It was successfully conducted as the medical department of Randolph-Macon College till the Civil War, when it was closed and never opened again. To quote from the annual announcement for the session 1851-52, "In issuing this circular, the trustees feel authorized to state that superior advantages are presented by their medical school for acquiring a thorough knowledge of medicine in all departments usually comprised in the curriculum of study of the best medical institutions of this country. The great length of the session (ten months), the practical manner of the teaching, the experience of the faculty both as physicians and teachers, and the remoteness of the school from the scenes of dissipation and extravagance, they hope will commend itself favorably, at least to parents who desire their sons educated as physicians free from the contamination of city customs. This school has been acknowledged by the most distinguished medical institutions of the United States; among them may be mentioned the Jefferson School in Philadelphia, the University of New York, and the University of Louisville, and its students admitted by these schools in the *ad eundem* footing, and the trustees confidently believe that its course of instruction will compare favorably with that of any medical school in the union for its thoroughness and extent, as well as for the high grade scholarship of its pupils." After describing further the methods of clinical bedside instruction, both medical and surgical in the infirmary, it says "surgical operations are performed daily in the neighborhood, to which all students are general admitted."

Many brilliant students no doubt, who could not afford a further education, went into active practice from this small, but very excellent school, and, no doubt, were able to render valuable service to humanity. The faculy was small, composed of three Mattauers. Dr. John Peter Mettauer showed clearly he had no single track mind, for he was professor of medicine, surgery, clinical medicine and clinical surgery, obstetrics and pathology. Many distinguished Virginians attended this small school. One I may mention especially, the late Dr. Oscar Wiley, an ex-President of this Society, who graduated from this small college in 1851, and from Jefferson in 1852. Through his son, Dr. Minor Wiley, of Salem, Virginia, he has given us an excellent idea of the thoroughness of the Mettauer school, and of how favorably it compared with the best he saw at Jefferson.

In recognition of his scholarly attainments, Hampden-Sidney College, in 1839, conferred the degree of Master of Arts upon Dr. Mettauer, and subsequently he received the degree of LL.D., but from what College I have been unable to ascertain.

Dr. Mettauer was the first surgeon in this country to use the metal suture for the vesico-vaginal operation, although Dr. Marion Sims is usually given the credit for this discovery. I wish to quote from Dr. George B. Johnston, who looked up the literature on this question twenty-five years ago: Sims says in part—"In 1845 I conceived the idea of curing vesico-vaginal fistula." Mettauer's first reference to the matter appeared in the *Boston Medical and Surgical Journal*, volume twenty-two, page 154, twelve years before Sims' communication, and it clearly outlines the operation which ought always to be associated with his name. In the *American Journal of the Medical Sciences*, new series, volume 14, page 117, five years before Sims' communication, Mettauer says, "I am decidedly of the opinion that every case of vesico-vaginal fistula can be cured, and my success justifies the statement." He made his own lead sutures at first, and later his silver sutures. He had a mechanical work shop adjoining his office, in which he fashioned many new instruments for his work.

In the remote country sections any physician could practice medicine, but few attempted anything other than the most ordinary surgery. Dr. Mettauer seemed to have a special gift of dexterity with all kinds of mechanical appliances, and with his knowledge and enthusiasm, he made a great success of surgery. His greatest working period, from about 1825 to 1850, was before the days of anaesthesia. Surgical operations were then tortures to the surgeon as well as to the patient, and the strain upon him must have been fearful. As abdominal surgery at that time was in its infancy, his surgery was confined chiefly to amputation of all kinds, bladder surgery, all kinds of plastic work, and last—but not least—the operation for cataract. It is recorded that he performed over eight hundred operations for the removal of cataract, and he was no eye specialist either, which should make some of our present day eye surgeons sit up and take notice. He had none of our modern instru-

ments, nor did he even have cocaine; the wonder is, "how did he do it?" He made most of his own instruments for this operation. It is almost impossible for the present day physician to realize what an amount of work Dr. Mettauer, single-handed, was able to accomplish. He was most exact and methodical, never slurred over anything, and kept wonderful records for his time. It is recorded that at the height of his fame he had constantly under his care from forty to sixty surgical cases. He performed over four hundred operations for stone in the bladder; over two hundred for urethral stricture; and his operation for cleft palate was clearly the first of its kind in this country. He performed this operation often and his results were good. His instruments for this operation also were of his own invention.

Most of his operations were performed, not in a hospital, but chiefly in the patient's room, and it is said that his results were remarkably good. They must have been, for the surgeons here will tell you that a surgeon cannot build up a reputation, in the country districts especially, on failures. Dr. Mettauer had to operate under what would now seem almost insurmountable difficulties. He had no anesthetics, no trained assistants, no trained nurses, though an abundance of good and loyal helpers. He had no X-ray or laboratory to help him in his diagnoses. He had no antiseptics, no bath tubs, no sewer system, no screens to protect from flies, no electric lights, not even lamps, but old fashioned candles supplied most of his light at night. Infection was the thing to be dreaded in those days. Dr. Roswell Park, in his History of Medicine, records that as late as 1876, in the best hospitals in this country, as well as abroad, that at times 90 per cent of all patients operated upon subsequently died of blood poisoning.

In addition to his enormous practice, Dr. Mettauer found time to do a wonderful amount of writing. He wrote on almost every branch of medicine and surgery that was of chief interest in his day, and his articles were published in the best journals of this country. Among some of his best essays may be mentioned the ones on yellow fever, remittent and intermittent fever, continued fever, typhus fever, Asiatic cholera, congestive chill, cystitis, vesico-vaginal fistula, hare lip, cleft palate, amputation of the scholder, ligation of the carotid, and puerperal fever. His clear, exact and complete description of disease was simply marvelous. He left out nothing. Many of his essays are masterpieces. He had great respect and a mortal dread for puerperal fever. It is said that one of his wives died of this horrible disease, and it made an everlasting impression upon him. One of his best essays, written just before he died, and when he was in his eighty-eighth year, was on the subject of puerperal fever. He begins with a review of the sad history of this horrible malady and says they practically all die; then he reports a few cases, one of which recovered. When he first saw this case on the third day after delivery, realizing her desperate condition, he says he determined to bleed her nigh unto death;—this he did, for his description of her collapse leaves no doubt in our minds as to how close unto death she came. He then describes how she rallied. She lived a long ways from him in the country, and he did not see her again for two days, when he repeated the performance, and she recovered. He believed strongly in drastic purging as a preventive, and bleeding as a curative measure for this malady.

In addition to his voluminous articles for current journals, he left an unpublished manuscript of 3,000 pages on surgery, written on the old blue legal cap paper of his day. This book shows its author had a very clear and comprehensive idea of the surgery of his day, and an intimate acquaintance with the best literature of the times. It is not now known why this book was never published; it was clearly not on account of lack of funds.

Dr. Mettauer did not believe that a man was made to live alone, for he was married four times, and was the father of thirteen children. Several of his children died in infancy or when quite young, but he had enough left for a large family. He had only three sons, all of whom studied medicine. His eldest son, Francis Joseph, practiced medicine in Prince Edward County, and survived his father. His next son, Henry Archer, lived in Prince Edward until after the war, and then located in Macon, Georgia. His third son, E. Munford, after graduating in medicine at Jefferson in 1851, went to Florida to locate; died quite young, and was buried there. His sons, Joseph and Archer, are buried by the side of their father in the cemetery at Hampden-Sidney. None of his sons ever married; hence, there is no descendant of Dr. Mettauer to perpetuate the name. Many of his daughters were mar-

ried, and there are a few of his grand and great-grand children now living in Prince Edward. I asked an old friend who knew Dr. Mettauer well the last thirty years of his life if the doctor lived happily with all these wives, and he said, "Oh, yes, they all died a natural death."

Dr. Mettauer never made his daily rounds on horse back, as was the custom in his day, but always went in a comfortable carriage drawn by a handsome span of horses, driven by his negro coachman. Dr. Mettauer always read while driving. The roads were bad and travel was slow; hence, he could not afford to lose valuable time. It is said he was ever busy, always in a hurry, walked rapidly, and had little to say to anybody except strictly on business.

When, amid the scenes of his life work, if you mention the name of "old Doctor Mettauer" (as he was familiarly known) to any of the older natives, they will smile and show an immediate interest to tell you all they know about him. They will begin by saying, "he was a great man, but peculiar." He is recalled, not alone for his wonderful work as a surgeon, but for many of his outstanding characteristics, which tradition has added to, no doubt, to make good stories.

Dr. Mettauer, burdened with so many eccentricities which genius always imposes upon her subjects, was a unique character. Many stories are told of his peculiar habits,—some are true, and, no doubt, many are untrue. The one that every body will refer to was his habit of always wearing a big stove pipe hat, even to his meals. The old man had a very good reason for this,—he became bald early in middle life, and was forced to wear a wig. He was always very sensitive, and scrupulously immalculate in his dress, so he chose to wear the high hat to save the ridicule of the wig. He always wore kid gloves while lecturing. This may have been to keep his hands in condition for delicate surgical work, or it may have been to conform to his peculiar ideas of dress.

The habit of not going to church was also a source of comment and wonder, for he was not an irreligious man, but, on the other hand, a very religious man except for the church going. He attended church regularly when he was young. The cause of his staying away when older came about in this way: his father built a Methodist church just across the road from the old home site, as a memorial to his wife, and this church was used for years, but, finally, the Methodists decided to tear it down and move to a more accessible place. This was done over the protest of Dr. Mettauer. He felt so aggrieved that he never went to church again.

The remarkable thing about Dr. Mettauer was that he chose to content himself with a life in the country, far removed from any city, but it must be recalled that country life in his day was not what it is now. The aristocracy of the south lived in the country at that time, and they pitied anybody who was forced to live in the city. A man of his ability could have been a shining light in any city. However, he did not mix well with strangers. He had his life-long friends in the country, and when he stayed away for a short period he longed to return, and seemed lonesome for his old county. His love for his old county was almost a passion.

He was a great student and kept abreast of the times. He regretted that he was never able to go abroad and come in peresonal contact with the masters in medicine of his day. Early blessed with a large family, and burdened with more work than he could attend to, he felt that he could not afford to take the time to go abroad. He was a great admirer of Louis, the noted French physician who was doing so much for medicine in the second quarter of the nineteenth century, and there is frequent reference to Louis in many of his essays on medical subjects.

Dr. Mettauer was modest and retiring in his manner, and seldom entered into controversy; his patients adored him, and he made ever fast friends through his patients. His ability and devotion to duty, all admired. He was a man of few words; he enjoyed work and was always busy attending to his own business.

Dr. Mettauer was born and lived his entire life, with the exception of the few years he was away, in the old homestead of his father by the road side about half way between the old village of Prince Edward Courthouse (now called Worsham) and the cross road village of Kingsville. He was fond of his home, and devoted to his large family. Advancing years seem to have brought few of the infirmities of age, for it is recorded that in the last week of his life he performed three surgical operations; an amputation of the breast,

the removal of a stone from the bladder, and the removal of a cataract.

While still in active practice, and in his eighty-eighth year, he was seized with acute pneumonia and died within three days, on November 22, 1875. How he could have lived to reach the age of eighty-eight, still hale and hearty, seems hard for us to understand. It is needless for us to say he had a rugged constitution, and he must have taken wonderfully good care of himself. We must conclude that physicians were not harassed in those days as they are now in these hustling and progressive days,—but we must also realize that in those good old days a doctor could not get rid of a troublesome patient by sending him to a specialist,—he had to worry through with him to the end. Dr. Mettauer had this advantage; he practiced in the quiet solitude of the open country, away from the madding throng,—not hampered by custom, not disturbed by phones, street cars, trains, automobiles, graphophones and radios. He could get up early and work late, and had no social or civic duties to disturb his life.

His life was not without the pin pricks of professional jealousies, for any man doing the work that he did would naturally have some knockers. He was very sensitive, and felt keenly the slight of his fellow physicians sending away for a consultant when he was so close at hand. He was very outspoken when necessity demanded it, and did not hesitate to speak his mind. On one occasion one of his neighboring physicians sent to a distant city for a consultant to see a patient who was desperately ill, and later, when the patient was moribund, Dr. Mettauer was called in. After an examination of the patient, he said to his fellow doctor, "It is a shame to let prejudice cause the death of such a fine woman."

A man must be judged by his times and his surroundings, and I am sure all will agree that Dr. John Peter Mettauer was a very remarkable man, and that the work he accomplished single-handed in those pioneer days in the second and third quarter of the last century clearly entitles him to rank in medical history with Mott, Dudley, Sims, and McDowell. I deem it a special privilege to have been allowed to recount some of the deeds of this grand old man, and express, though in a very feeble way, our sense of the value of his work and the lessons of his long and busy life.

Medical Arts Building.

THE PHYSICIAN AND THE PHARMACIST.*

By WORTLEY F. RUDD, M. A., Richmond, Va.
From the Department of Pharmacy, Medical College of Virginia.

As instructor in chemistry for a quarter of a century it has been my privilege to teach students of medicine, dentistry and pharmacy. Only since fundamental chemistry has been a premedical requirement have my teaching contacts been limited to students of dentistry and pharmacy. This long experience with young men and women preparing for these three professions—a contact frequently continued well into the life work of former students as they have gone out into the practice of their separate professions—and my reflections resulting therefrom constitute my only reason for discussing very briefly some of their problems before the Medical Society of Virginia.

It is perhaps trite to say that there is but one reason for the existence of physicians, dentists, pharmacists and nurses, viz., that the public may have better health. Whenever members of any one of the groups lose sight of this objective, public respect for such individuals or groups is correspondingly lowered.

If these groups are, and I believe they do, constitute component parts of an ideal health unit, it is likewise manifest that any failure in team work among them must result in delay and waste of effort, and is, consequently, a net loss to society.

I am of course aware, and regretfully so, that there has been little conscious effort to integrate these forces for the common good. The very great difference in the educational background and professional training obtaining among the groups in the past has given rise to such class distinctions that the groups themselves have almost lost sight of the fact that they have a common objective. I think it but fair, too, to say that the wave of commercialism that has swept over the field of pharmacy, almost burying its professional activities in many instances, has been a damning influence which has frequently largely negatived the struggles which the idealists in pharmaceutical education have made to keep the moorings of pharmacy safe.

Did I not believe that the peak of this wave has already been reached, and that in the offing is the promise of a clearer understanding on the part of the pharmacists themselves of their professional obligations and oppor-

*Read at the fifty-seventh annual meeting of the Medical Society of Virginia in Norfolk, October 12-15, 1926.

tunities in the whole health program, I would not have the temerity to suggest that the physicians of the State recognize and encourage the pharmacists in their attempt to share more in the health work in which physicians are the recognized leaders.

It has been my privilege to observe at close range the throes through which medical education has passed since the beginning of the present century. It has come through quite successfully. Dental education is just emerging from a similar revolutionary process. Pharmaceutical education is now just at the threshold of a change which gives great promise of training the pharmacist of the future, so that he will be a much larger factor in health problems than he has been in the past.

Four years ago one of the great foundations, the Commonwealth Fund, undertook a study of pharmacy to determine its real status. Dr. W. W. Charters, one of America's leaders in such investigations, was in charge of the study, and in the final draft of the full report of his committee which is now in press, he has this to say about pharmacy:

"After a careful study of the pharmacy curriculum with an open mind for a period extending over more than two years, the director of the study is definitely convinced that pharmacy is a profession rather than a trade. Conspicuous among the duties of the pharmacist is the group which deals with public health. A well-informed pharmacist is the best single individual to disseminate information about public health."

Naturally such findings from so authoritative a source as the Commonwealth Fund have made a profound impression upon all of those primarily interested in the training of the pharmacist of the future. Pharmaceutical educators who have given serious consideration to these problems for the past decade were already basing curricula upon such a presumption. You may be interested to know that in your own state school, graduates in pharmacy must have a minimum of three years of professional training, in addition to four years of high school work, and a number are taking the four year course now offered, and receiving the Bachelor of Science degree upon its completion. Three of the pharmacy schools of the country are offering the four year course only, and the American Association of Colleges of Pharmacy is taking definite steps to have the four year pharmacy curriculum the minimum requirement for the training of pharmacists.

I am bringing these things to the attention of the physicians of the State because you should know that the pharmacist you will work with in the future is going to be trained to render an entirely different type of service from what he has been trained to give in the past.

Until recent years rather sharp distinctions have been drawn between medical and dental education, chiefly on the ground of the differences in the biological point of view of the training required for these two professions. Even a greater distinction has been made between these two professions and pharmacy.

It may interest and even surprise you to know that today the better schools of pharmacy give strong courses in general biology and botany and some work in other biological sciences, including physiology, pharmacology and bacteriology. In many schools, including our own, these courses are taught by the departments giving the same subjects to medical and dental students, but not in the same classes.

I think it but fair to say in this connection that the pharmaceutically trained man probably knows more fundamental chemistry than the average man in the other medical sciences. Biological chemistry is being added in the three year curriculum.

More than twenty years ago I heard one of America's prophets, Dr. Harvey W. Wiley, say in an address to a large group of physicians, dentists and pharmacists, both students and practitioners, that the youngest of them would live to see chemistry recognized as the corner stone of all medical practice—that even bacteriology and pathology would be as much chemical subjects as bio-chemistry was then. Already we are seeing some of this come true, and the sound training in chemistry which the pharmacist is receiving fits him admirably for the new point of view.

These facts regarding curricula are cited in detail that you may know how rapidly the educational background in pharmacy is changing. From a purely vocational training a decade ago, we now are putting it on a definitely scientific basis. Realizing this, I am now speaking for this new type of man that will soon be among you. He is already on the way. He is being trained in the same environment with physicians, dentists and nurses.

having, in many instances, the same instructors and, therefore, getting the same ideals of service. He will know well his part in the program of health. There will not be a great many of them, probably fewer and fewer as the years go by, thus gradually enlarging the professional opportunity of the individual as competition becomes less acute.

This is a large program, much more difficult perhaps than the one that confronted the medical profession thirty years ago, or the dentists within the past decade. It is, however, a fundamentally sound program and, therefore, must not, I am even constrained to say cannot, fail. May we not hope that right here in Virginia where we have almost ideal conditions for team work among all of the groups having to do with public health problems, we may set an example in integrating all of our forces to the end that each group shall, in its own sphere, not only fulfil its own function, but complement the efforts of the other groups.

DISEASES OF MIDDLE LIFE—CAN WE PREVENT THEM?*

By M. O. BURKE, M. D., Richmond, Va.

Diseases of middle life, or the diseases from which far too many people die between the ages of forty and sixty years, are classified as preventable, such as respiratory contagions and infectious diseases, and unavoidable, such as cardio-vascular-renal diseases and nervous and mental diseases. The unavoidable diseases are really diseases of old age.

Hygiene and preventive medicine have increased the average life about twenty years, and have decreased the general annual death rate per 1,000 about 2 per cent. This has been accomplished in the first to the third decades.

The death rate from forty to sixty has constantly increased during the last twenty years, and markedly so in the last five years.

The Report of Mortality Statistics by the U. S. Government is as follows:

1913—Deaths from all causes 14 1 per 1,000
1923—Deaths from all causes 12.3 per 1,000

Non-Preventable Diseases of Middle Life
1913—2.87 per 1,000
1923—3.80 per 1,000

This shows an increase of nearly 33 per cent.

Death Rate per 100,000

	1922	1923
Nervous system	124.1	128.1
Circulatory system	190.8	200.9
Diseases of the heart	148.4	157.3
Chronic nephritis	82.4	83.9

*Read at the fifty-seventh annual meeting of the Medical Society of Virginia, in Norfolk, October 12-15, 1926.

The death rate between the ages of forty and sixty in 1923 was almost double the rate in 1910.

We do not know how many of these people who died before sixty contracted their trouble in early life.

We cannot prevent ultimate death, nor can we prevent old age. Can we not defer the over-powering effects of degeneration until after middle life?

Causes of Degenerative Diseases

Dieblafoy, Hewlet, Osler, Piersol, Pepper, Thayer, Wells and practically all of the teachers of medicine give as causes of degenerative diseases:

Heredity
Specific or infectious fevers
Chemical poisons
Focal infections
Excessive mental and physical strain
Over-indulgence in food
Alcohol, tobacco, coffee and tea (these four causes have not been accepted by all.)

Endocrin Glands

Metchnikoff believed that the seat of old age was in the colon resulting from constipation; this has not been definitely proven.

"Since many of the obnoxious products of metabolism are eliminated through the bowels, failure of elimination through this channel may lead to a true auto-intoxication as much as may deficient renal elimination" (Wells).

Physical and mental fatigue produce poisons which may cause trouble.

Again, Wells tells us that cirrhosis of the liver, chronic nephritis, myocarditis and arteriosclerosis may be due to long-continued non-alcoholic intoxications.

Most authors intimate that degenerative changes begin in the capillaries.

As physicians, can we help to defer old age? Possibly,—if we could teach the people hygiene, how to eat, how to work, how to play, and how to rest. If we could decrease the non-essential strain of modern life, we could accomplish much toward old age deferred.

I have chosen this subject, first, because it is the largest unexplored field in preventive medicine; second, because I hope to arouse a discussion by this Society and to obtain the valuable lessons taught by the experience of its members.

People have been seeking the Elixir of Youth from time immemorial as they have been seek-

ing happiness for the same length of time, forgetting the fact that the secret of happiness is a state of mind and the Elixir of Youth is a state of health. Both are within ourselves and must be cultivated from an early age. Both are somewhat dependent upon heredity.

Heredity we cannot avoid, but we can help future generations, and to a certain extent lessen the stigma within ourselves.

The diseases of middle life are really the diseases of old age.

Old age must come to all, but to far too many it comes too soon.

The man or woman who reaches the age of maturity without organic trouble should live to be four score years or more. Middle life is the most important part of life. It is the time when men and women are most necessary to the family, to the community, and to the State at large. Work, recreation and rest should be judiciously distributed during this time if we wish to reach a natural ripening in the harvest of years.

Some of the diseases of middle life are contracted in childhood, hence the importance of watching the convalescence of all infections fevers in children: colds and sore throats should not be treated lightly. Focal infections should be cleared up as soon as possible. All dead tissue begins to disintegrate soon after it dies and should be removed.

Periodic examinations from chilhood to old age would reveal many troubles in their incipiency and should prevent much suffering and prolong life.

204 *East Franklin Street.*

THE SURGICAL MANAGEMENT OF HANDICAPPED TOXIC GOITER PATIENTS —WITH ILLUSTRATIVE CASES.*

By LINWOOD D. KEYSER, M. D., Roanoke, Va.

At the present time we are passing through an era of rapid development in the treatment of thyroid disorders. New classifications in the light of biochemical and clinico-pathological studies are constantly being brought forward. These helps at times to clarify, but may also serve to confuse. For instance, a few years ago Plummer differentiated toxic adenoma and exophthalmic goiter as disease entities. For a time the pathologic status of toxic goiter seemed clear. Within the past month there have appeared two articles, one from Rienhoff, of Baltimore, and another from Allan Graham, of Cleveland, which strongly infer, if they do not declare, Plummer's concepts to be somewhat erroneous in that they hold toxic adenoma and exophthalmic goiter to be different phases of the same disease.

In going from one great goiter clinic to another, one cannot help being impressed with marked divergences of opinion as to the etiologic, pathologic, clinical, and therapeutic features of thyroid disease. However, in the main, all are handling toxic goiter patients on much the same basis, and the great reduction in mortality from the disease cannot but make us feel that real progress is being made.

Within the past two and a half years we have treated by surgical methods some twenty rather unusual goiter patients. Fourteen of these patients have presented certain pathologic features, the presence of which made their management somewhat more hazardous than usual, and taxed our therapeutic resources to the utmost in getting a satisfactory end result. Time will not permit giving each case history in detail. One had an obstructive type of non-toxic adenoma complicated by a four months' pregnancy. Another presented the same condition with hypertension of 220 systolic over 140 diastolic pressure, with cardiac hypertrophy and dilatation. Two patients suffered from recurrent adenomata following excision a number of years previously. One of these, 63 years old, suffered from a manic psychosis. Both had had hyperthyroidism over a number of years and obtained satisfactory results from thyroid excision. The second patient, aged 50 years, had paralysis of the right vocal cord from her previous thyroidectomy. Another patient had a dilated aortic arch and toxic adenoma over a period of four years. Three patients of the series had definite attacks of cholecystitis during the post-operative course, and one of these has stood cholecystectomy two years later, with benefit. Nine patients of the series had severe hyperthyroidism of over five years' standing, and marked visceral degenerative changes—such as cardiac hypertrophy and dilatation in all degrees, albuminuria, emaciation, and the like—were present. Two of these presented themselves in a state of fibrillation. Our sole death in the series came in one of the fibrillation cases in which the heart filled the chest out to the axillary line. Her hyperthyroidism was not so extreme following operation as to warrant

*Read before the Southwestern Virginia Medical Society, at Blacksburg, Va., September 9-10, 1926.

death, but, following the reaction from an intravenous saline infusion, cardiac failure took place. These nine neglected cases form the basis of what we are about to say. None of them can be considered completely cured, as the toxemia had been present entirely too long, and the cardio-visceral changes were of such extent as to not allow complete restoration to normal.

In the preliminary treatment of such handicapped cases, hospitalization, bed rest, and absolute quiet, are the first factors of importance. Careful detailed history and physical examination with all the resources of a good clinical laboratory are essential in sizing up the patient at the outset. X-ray of the chest, especially fluoroscopy and laryngoscopic examination, are routine. A diet high in carbohydrate, with feedings between the meals, the forcing of fluids, and application of cold over the heart and thyroid gland are carried out. Usually the basal metabolism will drop about 15 points in a few days under such regimen.

In administering iodine, we follow Plummer's advice and give it to all such cases, even if they are of long standing and have had iodine before. In cases where iodine has been administered previously, as is almost always the case in these medically treated and surgically neglected types, the response to Lugol's solution is slight in comparison with recent cases of hyperthyroidism where its use is attended with brilliant results. Especially in the adenomas have we failed to note much improvement, and this is the usual but not the uniform opinion of others. Where the condition of exophthalmic goiter has been present for a numer of years, with many crises and remissions and the taking of much medicine and use of local applications, we have noted little response to iodine in the pre-operative course. It has been thoroughly tried in every instance and has not seemed to aggravate the symptoms, while in a few instances the basal rate has been reduced and the patients' symptoms have improved in striking manner.

As for the use of digitalis, both pre-operatively and post-operatively, we have employed it in all toxic cases. However, we must admit not being quite happy in its usage, and there is a tendency at the present time to dispense with digitalis in thyroid therapy in several of the larger clinics. It is held that digitalis is really of no avail and that it makes a poor risk from the cardiac standpoint temporarily appear better than it really is. However, the majority of thyroid therapists still hold out for digitalis when there is cardiac decompensation, dilatation, or auricular fibrillation. We are watching the trend of opinion closely along this line, but, to date, we have not developed the courage to omit digitalis from either pre-operative or post-operative treatment. Furthermore, we employ it in rather large doses. We can but believe that the myocardial tone is bettered, the volume output of the ventricles is increased, and, on the whole, the heart is better enabled to withstand the strain of those dubious forty-eight hours that follow operation. Of course, it has long been known that digitalis will not markedly decrease the tachycardia of the post-operative hyperthyroid reaction.

As for ligations, it is well known that they are of little avail, or worthless, in the case of the adenomatous hyper-functioning goiter. In the mixed types, or in cases of long standing exophthalmic goiter which have made little improvement on iodine administration, we have practiced bilateral superior thyroid arterial ligation. The results here have been, at best, just fair, and nothing like so striking as those obtained in cases of shorter duration. In these latter cases, iodine usually does all that is necessary in bringing about involutional change, and ligation is rarely necessary.

In choosing the time of operation, nothing in the field of surgery requires more careful consideration of detail. We try to catch these patients on the up-grade. Pemberton advises that after the peak of improvement has apparently been reached, to wait for a period of four or five days and then operate. To get the patient in the best mental state, with the lowest possible basal metabolic rate (under forty, if practicable), the slowest pulse rate, and the best weight, should be our aim. In cases going down hill in spite of every effort, extended over a period of a month or more, we are sometimes forced to take a chance.

As for the operation itself, we have varied the technique to suit the case. A number have been operated on satisfactorily under cervical plexus block anesthesia. This is time-consuming and the psychic strain is great, so that lately we have employed, more and more, infiltration anesthesia with ¼ per cent novocaine (without adrenalin) and light gas anesthesia—started immediately after the patient has been put in position.

Preliminary morphine-atropine hypodermic medication is used. In one case we have

given light gas anesthesia for several days preoperatively, but we do not thus "steal the goiter," as Crile advocates, in our usual case. Good exposure, careful symmetrical placing of the incision, gentle handling of the tissues, the avoidance of pressure, and careful hemostasis, with the reasonable use of time and yet no effort at speed, have been the ideals toward which we have strived. In long neglected cases we have tried to excise all of the gland except just enough to protect the recurrent nerves and parathyroids. Suture of the capsule over the parenchyma anteriorly, and of the pretracheal muscles to this, with fine suture, has been practiced. We have had to place paratracheal small guaze packs in several cases. We have had no pneumonia, no tetany, no hemorrhage of importance, and no loss of voice, even temporarily, in this short series of cases. Careful approximation of the platysma with interrupted catgut, and closure of the skin with interrupted fine black silk stitches has given us a good scar in almost every instance. A small Penrose drain is left in the center of the wound, and if drainage persists or if there are accumulations of serum, we keep this draining through the center of the wound so that the lateral portions of the skin may close by primary union. A large gauze pad with a goiter roll of gauze is bandaged in place. After twenty-four hours, this is cut away without lifting the patient's head, the drain being removed and fresh gauze applied. A wide band of adhesive is plastered face to face. This is slipped around the patient's neck with little disturbance of the head, and serves as a collar which may be fastened with further adhesive strips over the front of the dressing. In this manner, there is little unnecessary motion of the head and neck during the first few days, and, since employing this relatively painless dressing, we have been impressed with the greater comfort of the patient. Dressings are changed daily. In the event of retained serum, with temperature elevation, suppuration or inflammatory edema of the wound, we have used hot compresses of potassium permanganate hourly with good result. However, it is our impression that wet dressings cause some bogginess of the tissue, and a good hair-line scar is not so easily obtained. Consequently, we do not use wet dressings unless absolutely necessary. The occurrence of troublesome mucus in the throat is annoying. Swabbing the throat with gauze, steam inhalations and giving brandy in teaspoonful doses, if well tolerated, or hot lemonade in small amounts, usually controls this. In persistent cases, here, again, the hot pack to the throat is a boon.

Following removal of the patient to bed from the operating room, he is placed in the Fowler position, well supported on pillows. A subcutaneous infusion of saline, 1,800 c.c. in amount, is routinely given. In cases of extreme toxicity, this is repeated in 12 to 18 hours. Likewise, we give 500 c.c. of normal saline by rectum as a retention enema every six hours as long as retained. We try to avoid intravenous therapy as much as possible from the fear of a reaction. Transfusion has not been practiced, but should be resorted to if hemorrhage has been severe or if delirium with its ominous portent appears.

The late Professor Halsted looked with misgiving on the use of morphine during this period, holding that it cut down the eliminative forces of the body. However, at the present day it is held that the quietude of the patient far outweighs any slight depressor effect that morphine may have. We have used it freely and with good effect, giving it in doses of 1/6 grain every four to six hours during the first two days.

Whatever the status of iodine in the treatment of toxic goiter of any type during the pre-operative stage, its use in large amounts during the post-operative period is becoming more and more established. We have employed 30 minims in the 500 c.c. of rectal saline every 6 hours for four doses. If the patient takes fluids well by mouth, we have given it in 10 to 15 minim doses every four hours by this route. This may seem radical and an overzealous application of a good drug, but, if we are to rely upon it at all, why not give it to the limit? Such doses have not proved toxic, and we have not yet had reason to believe that they have been harmful. The post-operative crises of exophthalmic goiter have, we feel positive, been less severe as the result of intensive iodine administration.

Likewise, as mentioned above, we have employed digitalis freely at this time. Digitalin or digifolin is given intramuscularly during the first twenty-four hours, after which the tincture is given by mouth for a similar period. Then it is usually discontinued.

The application of ice-bags to the head, heart, and abdomen are routinely employed. If the temperature mounts to 104 degrees or

more, ice-bags are applied, in addition, to the flanks and limbs for varying intervals, depending on the condition of the patient. The Crile ice-pack, as such, we have applied once with good result.

Concerning the hyperthyroid reaction we have much to learn. Is it caused, as is usually held, by the squeezing out of toxins into the circulation by operative manipulation, or do we call forth rapid mobilization of the thyroxin stored in the tissues by removing suddenly the usual source of supply? The lessened severity of the reaction produced by administration of iodine or of aqueous thyroid extracts, as practiced by Rogers, might be evidence in support of the latter explanation. At all events, we deal with a profound metabolic shock, concerning which more biochemical investigation is in order.

A word of warning and a plea to the general practitioner and internist is in order. Goiter, exclusive of the colloid type of adolescence, is almost always an indication for surgery. Even the non-toxic adenoma is as serious a menace as a lump in the breast, and its operative mortality approaches that of appendicitis in rarity if done by a reasonably competent man. The administration of iodine, X-ray and other procedures, do accomplish wonders occasionally. I have seen one or two large adenomatous growths recede quickly under iodine locally applied. Just why, and for how long, I know not. These are the exceptions, and in our present day treatment the rule of majorities must guide us.

Toxic goiter, being recognized, should be surgically removed, and the earlier, the better, if the patient is to have his best chance. To the family physician belongs the obligation and the privilege of steering the patient at this time into the proper hands. Likewise, no surgeon should operate without frequent consultation and constant advice of an intimately associated internist. Thus, the patient may, in the majority of instances, be saved from becoming one of such a group as I have mentioned above, with the hazards of delayed surgery and a disease which is insidiously making its mark so deep seated that, even if the goiter is successfully removed and there is operative recovery, they are in a sense left with lowered cardio-visceral function for life.

Shenandoah Life Building.

THE VALUE OF THE HISTORY IN THE DIAGNOSIS OF PULMONARY TUBERCULOSIS.*

By PHIL H. NEAL, M. D., Catawba Sanatorium, Va.

Many advances have been made in recent years in the diagnosis of pulmonary tuberculosis. With the improvement of the X-ray and a fuller understanding of the physical findings, our chances of error have been materially lessened. In spite of this a large majority of the cases of pulmonary tuberculosis are not diagnosed until the disease has progressed to the moderately advanced or to the far advanced stage. Each year there are admitted to Catawba Sanatorium approximately 500 patients. A small percentage of these patients have taken treatment at home for a period of time covering from a few months to a year, but the vast majority enter the Sanatorium shortly after the diagnosis is made. In spite of the fact that we give preference to the early cases, approximately 50 per cent of those entering the Sanatorium are already in the far advanced stage of the disease. This is sufficient in itself to show that tuberculosis is not being diagnosed early enough to give the majority of patients a reasonable chance for recovery.

There are two chief reasons for this sad state of affairs. First, the patient often delays in seeking medical advice; second, the physician too frequently fails to diagnose and to advise the patient properly.

Of course, it cannot be expected that every physician be a specialist in diseases of the chest. It is a human impossibility for any one man to be highly skilled in each and every branch of medicine. Yet it would seem that at least 50 per cent of the cases should be tentatively diagnosed before the far advanced stage of the disease is reached, even without the use of the stethoscope or X-ray.

The purpose of this paper is to deal with only one of the diagnostic procedures, *the history*, which is as much available to the general practitioner as it is to the specialist.

It is the opinion of most authorities on the subject that the history is the most important single element in the diagnosis of pulmonary tuberculosis. David A. Stewart says: "Perhaps the pen is mightier even than the stethoscope."[1] Symptoms certainly precede definite X-ray and physical signs in the great majority of cases, and it is at this early stage

*Read before the Southwestern Virginia Medical Society, at Blacksburg, Va., September 10, 1926.

of the disease that more diagnoses should be made. History taking is laborious, but it is of such great value that no short cuts should be taken. Its importance, at least in practice, seems to be greatly underestimated.

A complete history is logically divided into three parts: family history, past history and present illness. The first will be considered independently; the last two as one, since in all chronic diseases the past history and present illness are so closely interwoven that they cannot be easily separated.

Family History

The family history is of great importance, both in the diagnosis and in the determination of the prognosis. It is generally conceded that tuberculosis is rarely if ever inherited, but familial predisposition to the disease is an acknowledged fact. Of greater importance than this is massive infection as a result of contact with an open case of tuberculosis, especially if this contact occurs during the early years of the patient's life. That the individual is of tuberculous stock is of little significance, unless he has lived intimately with the person suffering with active tuberculosis. But when there has been intimate and prolonged association with the tuberculous patient, especially in infancy and childhood, one is much more liable to develop the disease.

One thousand consecutive histories of patients with definite tuberculosis admitted to Catawba Sanatorium were studied for the purpose of ascertaining the frequency of a positive tuberculous family history. Though the family history might have been definitely tuberculous, no case was considered as positive unless the individual actually lived in the same house with the phthisical person, and unless the association existed for as much as two or three months. Out of the 1,000 cases studied, 520 or 52 per cent gave definite history of tuberculosis in the family. There were 368 or 36.8 per cent whose brothers, sisters or parents had the disease. Husband or wife, uncles, aunts, grandparents and cousins composed the remaining 152 or 15.2 per cent of the positive cases.

Over half of the 1,000 cases studied gave a positive tuberculous family history; and undoubtedly there were many other cases of definite but unrecognized phthisis in the family, which would have greatly increased the percentage of positive cases, if the whole truth were known. To say the least, these figures stress the importance of inquiring into the family history.

Past History and Present Illness

In questioning the patient concerning his past history, it should be recalled that tuberculosis is a relapsing disease with periods of remissions. His present symptoms are often due to a renewed activity of an old tuberculous process. Therefore, it is important to ask questions concerning past illnesses, especially as to "run-down" conditions, repeated attacks of la grippe, bronchitis and the like. Other diseases should be considered also, but it is of especial consequence to note if recovery from any of these diseases has been unusually slow. And a history of ischiorectal abscess or fistula in ano should make us very suspicious of some tuberculous involvement, and calls for a searching examination of the lungs.

Cough.—Of the manifestations of phthisis, cough is perhaps the most common. It usually begins in the early stages and is more or less present throughout the whole course of the disease. It is usually the symptom that first makes the patient suspect tuberculosis and brings him to the doctor's office. There is nothing characteristic of the phthisical cough. Often it is hacking in nature or hardly more than clearing of the throat. Frequently it is so slight as not to be noticed by the patient until his attention is called to it by some friend or member of the family. It may or may not be accompanied by expectoration. If there is expectoration, it may be of any type—mucus, mucopurulent or purulent,—and it has no characteristic color. The cough becomes more pronounced in the later stages and is usually more marked the first thing in the morning. At times the attacks of coughing are so severe as to cause vomiting. In any patient with a cough lasting as much as a month tuberculosis should be suspected and a most searching examination should be made.

Loss of Weight, Fatigue, etc. — Loss of weight usually accompanies active tuberculosis. When there has been a loss of as much as 5 per cent of the body weight during a period of several months, the cause should be thoroughly investigated. Dyspnoea is also an early symptom. Likewise, loss of strength and excessive fatigue, especially the fatigue that is not relieved by the usual rest, are very suggestive of tuberculosis.

Fever.—In the majority of cases the patient has not taken his temperature before consult-

ing his physician and he rarely knows whether or not he has had fever. Inquiry should be made, however, as to whether the patient has felt feverish or whether there has been a flushing of the face in the afternoons. Too much importance should not be placed on a single temperature reading made in the doctor's office, for the time of day has much to do with the patient's temperature. In addition to this, the excitement of being examined is frequently sufficient to cause an elevation of temperature. The patient should be advised to procure a good thermometer and instructed to take his temperature every two hours during the day over a period of several days. It will be found that practically every case of active tuberculosis gives an elevation of temperature, especially if the patient is going about his usual duties. Accompanying this there is usually an increased frequency of the pulse. An occasional case may progress to an advanced stage of the disease in the absence of fever, but this is indeed a rarity. Fishberg says that perhaps fever is the first symptom of active phthisis, and that the so-called afebrile cases are mostly the result of a faulty technic in taking the temperature.[2]

Dyspepsia.—It is not generally understood that indigestion and general abdominal discomfort are so frequently caused by tuberculosis, even when there is no definite involvement of the gastro-intestinal tract. The dyspepsia is chiefly due to reflex causes. The vomiting due to an irritated throat, and following paroxysms of coughing, is often suspected as being a result of gastric pathology. In many cases of diaphragmatic pleurisy the referred pain over the abdomen is not unlike that due to appendicitis, gall-bladder disease, or gastric ulcer.

Hoarseness.—Whether or not the patient has been hoarse should be considered, but hoarseness in itself is of no great significance unless it is prolonged or recurs frequently. The hoarseness may be due to a definite tuberculous infiltration of the larynx, but in the majority of cases it is probably due to a tenacious mucus covering the vocal cords or to a reflex disturbance of lung involvement resulting in an atonic condition of the cords.

Night Sweats.—Night sweats indicate the presence of some form of intoxication, and tuberculosis is a frequent cause. Though occurring chiefly in the later stages, they are not uncommon in the early stages of the disease. They occur more often during the early morning hours, after the temperature has fallen, but they may occur at any time when the patient sleeps. Sweating may or may not be accompanied by chills.

Pleurisy.—Pleurisy is a common symptom which is often taken too lightly. It is surprising how frequently the story of a pre-existing pleurisy occurs in the history of tuberculous patients. Regardless of whether it be a wet or dry pleurisy, it should be considered of tuberculous origin until definitely proved to be from some other cause. It is important to remember that the amount of pain is no indication of the amount of chest pathology. And the pain in pleurisy may be of any type—severe or mild, sharp or sticking, or simply a dull pain or a sensation of pressure or tightness. Beware of making a diagnosis of idiopathic pleurisy, for in the majority of cases it means tuberculosis. In this regard, J. A. Miller says that: "Of the so-called idiopathic pleurisies, at least 80 per cent may sooner or later be proved to be tuberculous."[3]

Hemorrhage.—Though the spitting of blood has long been associated with phthisis, a review of the histories at Catawba Sanatorium would indicate that there are many among our profession who still do not realize the significance of this symptom. Many of our patients have had definite pulmonary hemorrhages months or even years before their condition was finally diagnosed. Too frequently the patient is given a hasty examination and, because no definite physical signs are heard in the chest, or because the patient appears strong and healthy, it is assumed that the bleeding did not come from the lungs; and the patient, being assured that his lungs are sound, soon returns to his work and does not again seek medical advice until his disease has progressed to a point where the diagnosis is of very little therapeutic value.

It has been estimated that hemorrhage is the first recognizable symptom in at least 10 per cent of the cases. The spitting of blood should be regarded as of high importance. In the vast majority of cases it means pulmonary tuberculosis, even if the patient has no demonstrable physical or X-ray signs of the disease. Dr. J. B. Nicholls, in his wide experience at Catawba Sanatorium over a period of nine and a half years, does not remember a single case of blood spitting which was proven to be due to hemorrhage from the tonsils, pharynx or larynx.[4] This, in itself, should be sufficient to make us extremely dubious when we hear any one say—"No, this blood does not mean any-

thing serious; it did not come from the lungs."

According to Pottenger, "Spitting of blood, when other evident causes have been ruled out, should, without other data, make the diagnosis of pulmonary tuberculosis with no greater margin of error than our most approved laboratory tests diagnose other diseases."[5]

Conclusions

This ends a brief discussion of the most salient points to be brought out in questioning the patient concerning his history. From such a history, we may learn, first, the patient's liability to the disease through familial predisposition and contact, and, second, his subjective symptoms, past and present, which constitute the most important factors in the early diagnosis of pulmonary tuberculosis.

References.

1. Stewart, D. A.: Some Considerations Regarding the Diagnosis of Pulmonary Tuberculosis. *Am. Rev. Tuberc.*, 5:891, 1922.
2. Fishberg, Maurice: Pulmonary Tuberculosis. Lea & Febiger, 1919, pp. 181-185.
3. Miller, J. A.: Nelson Loose Leaf Med., Vol. I, p. 383.
4. Nicholls, J. B.: Personal Communication.
5. Pottenger, F. M.: Clinical Tuberculosis. C. V. Mosby Co., 1917, Vol. II, p. 170.

THE VALUE OF STUDYING THE RENAL TRACTS AS AN AID TO CORRECT DIAGNOSIS OF ACUTE AND CHRONIC DISEASES OF THE ABDOMEN.*

By B. E. RHUDY, M. D., Abingdon, Va.

No originality, or nothing new, is offered in discussing the importance of investigating the renal tracts, either in the acute or chronic abdomen, but an effort is made to call to the attention of this body a few of the simple and comparatively easy studies which may be made in order to arrive at a proper or definite diagnosis, which is always to be desired before determining on any plan of treatment, whether it be medical or surgical.

Realizing that much I will have to say is a familiar subject to many of this audience, it is with a spirit of co-operation for the patient's best interest and helpfulness to one another that we gather in these meetings.

The subjective symptoms requiring thorough investigation of the renal tracts are often difficult to obtain and at times much more difficult to interpret, especially if it be of the right side. Objective symptoms, therefore, should be carefully analyzed; a few pus cells or red blood cells in the carefully obtained catheterized specimen of urine may be the only lead which will be the deciding factor in making an exhaustive study of the renal tracts.

Of course, there are certain diseases of the abdomen, other than of the urinary tracts, in which we may expect to find a few leukocytes and red blood cells in the urine, such as tubo-ovarian disease or an acute post-cecal appendix. On the other hand, a patient may give an indefinite or elusive history of some urinary disturbance, as intermittent frequency, or dysuria, which may have been due to pyelitis, pyelonephritis, stricture of the ureter, or both; or of calculus somewhere in the renal tract, etc.

However, there are cases in which we cannot always eliminate the possibility of a calculus just because microscopic blood is not demonstrated in the urine. Observations on series of cases reported show that blood may be absent in from 14 to 20 per cent of the cases which have renal calculus; this, no doubt, means that the specimens were obtained during the quiescent stage, and, if subsequent examination of urine had been made, the red blood cells would most probably have been found. When pus and red blood cells are present, they should be regarded as significant, and a search to determine the source should be made, although subjective symptoms, such as localized pain or perhaps vesical distress, may be absent. The latter, in the absence of any complicating factors, may be entirely absent unless there is a marked pyuria.

Another symptom or sign in all too many cases which give a history of abdominal pain, perhaps recurrent acute attacks, and one, by the way, which does not reflect any great credit on the medical profession, is that of a scar of a previous operation for removal of the appendix, and the patient gives a history of not having been relieved of his pain. It is not within the scope of this discussion to go into detail as to the methods of investigation and treatment of the renal tracts. The chief point I wish to make, especially, is the absolute importance of regarding the renal tracts with suspicion in a very large percentage of abdominal cases, and that no study can be regarded as complete until the renal tracts have been proven to be innocent.

With the most careful use of the methods that are available by which to locate the pathology, to analyze its character, and to outline its best form of treatment, roentgenological and urological methods are indispensable in a large

*Read before the Southwestern Virginia Medical Society, at Blacksburg, Va., September 9-10, 1926.

percentage of abdominal cases. A positive roentgenogram is of great value in any case, although a negative X-ray examination in some instances may be misleading if we depend upon the unassisted roentgenogram to decide whether the symptoms are due to a lesion of the renal tracts. However, with the improved technique recently applied, a considerably greater percentage of calculi are demonstrated, but because of their composition or peculiar location, or both, they may fail to show if the study is not carried further. Cystoscopy *per se* is of little value in arriving at a diagnosis of the renal tract, and further investigation is necessary, such as catheterization of the ureters, putting to use the various accessory methods of investigation which often suggest further roentgenological studies, such as pyelography and uretero-pyelography—first with the catheters in place, and after they have been withdrawn.

Summary

Investigation of the renal tracts is of vital importance in many cases of acute and chronic abdominal conditions.

With modern methods of investigation of the renal tracts available, contra-indications are rare.

The patient is entitled to every means of investigation available, in order that a proper diagnosis may be made and measures taken for the relief of the condition present.

VITAMINS, RADIATION AND RICKETS IN THE TEMPERATE ZONE.*

By ST. GEORGE T. GRINNAN, M. D., Richmond, Va.

Amins are so essential to growth that the term vitamin designates certain amins necessary for proper growth in the temperate zone. Fat soluble A vitamin has been extensively studied, and the cause of rickets and certain eye diseases is now known to be a lack of vitamin A in parts of the temperate zone.

Nearly all rickets occurs in the Northern Hemisphere between latitudes 30 and 60. Latitude 30 passes through Northern Florida and New Orleans. Latitude 60 strikes Cape Farewell, Greenland. We must remember that New Orleans is half way between the equator and Cape Farewell, Greenland. The west coast of the United States has less humidity, more sunshine and a warmer climate than the East Coast. People, therefore, stay out in the open more and get more radiation and the children have less rickets on the west coast.

In Europe, latitude 30 has brilliant sunshine. Cairo, Egypt, is latitude 30. Rome which is the same latitude, 40, as Philadelphia, Pa., has less rickets owing to sunshine and warm climate. The records of the Hamidie Children's Hospital, Constantinople, latitude 41, shows severe rickets.[12]

Rickets occurs but little in the Southern Hemisphere because there is little land south of latitude 35. Cape Town, Africa, is latitude 35. Patagonia extends from latitude 40 to 52. A few scattered islands, Tasmania and part of New Zealand, are in the same zone, but the climate there is unsurpassed.

Rickets occurs in the richest countries of the world. India, the poorest county has practically no rickets.

Rarely does rickets occur in the tropics and in certain countries where the sunshine is brilliant and the atmosphere is clear. The large Karro plateau of South Africa is free from rickets.

India and China have brilliant sunshine and little or no rickets. When the sun is brilliant in India the most deficient diet will not produce rickets.[13]

Rickets increases as the latitude is moved North or South from the tropics. Every negro family living in the tropics and having no rachitic children, on moving to latitude 35 or 40 will have rachitic children.

Maffei[1] pointed out that in the Alps there was no rickets at an elevation of 3,000 feet and over. Seldom is rickets seen between 2,000 and 3,000 feet. From 1,300 to 2,000 feet rickets is more prevalent.

Denver, Colo., has an elevation of 5,200 feet, latitude 40, the same as Philadelphia. Denver has 20 per cent more sunshine than Chicago, New York, Philadelphia, Richmond or New Orleans. The sun's radiation in Denver is 43 per cent greater than the above named cities at all seasons. In Denver, rickets plays no factor. There are no bowed legs, the cases are difficult to diagnose, and are mild and short in duration.[14]

In Chicago, latitude 41; Richmond, latitude 37½; Boston, latitude 42,—100 per cent of negro babies are rachitic. In Denver, 68 per cent of negro babies are rachitic,—mild cases.

In Boston, 95 per cent of all babies are rachitic. In Denver, 24 per cent of all babies

*Read before the Richmond Academy of Medicine, April 25, 1926.

are clinically rachitic, and 29 per cent by the X-ray survey.

The Eastern cities have much severer cases than are seen in Denver. There is no rickets in Tibet highlands, altitude 11,300 feet.

Japan has brilliant sunshine, winter and summer, with little rickets.

Denatured sunlight has little value as compared with direct light. Ordinary glass keeps out the ultra-violet and infra red rays which prevent and cure rickets.

The value of light has been noted for a long time, for Pliny remarked, "Sol est remediorum maximum."

Summer camps for city children on some of the plateaus of the Blue Ridge Mountains in the Shenandoah National Park would be worth the price of the park in human economy.

Man cannot exist in the temperate zone unless the diet is suited to the zone. More fats must be eaten by the young in early life to maintain proper growth. Animals kept in captivity develop rickets, and Howland remarked that when man domesticated animals he domesticated himself and rickets occurred in his children. Rickets is the scourge of zoological gardens today. Wild animals do not have rickets. The bones of monkeys that were kept in captivity in the temple of Thebes, latitude 26, 2,000 years ago show rickets.[2]

Dr. Grulee says that rickets is present in every negro child in Chicago. The dark pigmentation prevents proper radiation. In Africa it saved him from over-radiation. Many Northern animals turn white in the winter time, thus getting more radiation.

Von Housemann[3] noted that babies born in the late part of the year and dying in the spring show rickets, while those born in April or May and dying in the autumn have no rickets.

Spring babies have a better chance and the eugenic enthusiast will have to set the time.

Calcium and phosphates have been widely studied in connection with rickets. Two types of rickets are noted, one a low calcium and moderate phosphorus, the other a low phosphorus and very high calcium content. With the low calcium type tetany is apt to occur. Cod-liver oil cures tetany.

When the product of calcium in m.g.m. per 100 c.c. of serums and phosphorus in m.g.m. per 100 c.c. of serum is 30 or lower, rickets always occurs.

When the product is between 30 and 40 rickets is usually present.

When the product is above 40, healing is taking place or there has been no rickets.[4]

Calcium triphosphate composes 85 to 90 per cent of bone. There are many physico-chemical problems involved in the deposition of calcium, such as the pH. temperature and CO_2 tension not yet understood. The blood of females contains more calcium than males before breeding, and less after breeding.

The tide of calcium is lowest in the winter months; hence, rickets is most noted in January, February and March.

The problem of heating milk to make it safe is constantly discussed. The "milk stone" in the pasteurizing plants is formed from calcium salts which have been rendered insoluble by heat and thus lost as a bone builder. When milk is heated it is essential to feed vitamin D, which is most abundant in cod-liver oil and is present in butter.

In rickets, there is a higher secretion of trypsin from the pancreas. Children who continuously have 160 to 200 units of trypsin in one grain feces are suffering from florid rickets. Trypsin is a protein compound which can be reabsorbed. When given parenterally, it is a deadly poison.[5]

Rickets is a disease of early life. By the end of the second year, most of the gross defects of development of the permanent teeth have taken place although the first permanent molar does not appear until the sixth year.[3] Hence, the defect in development takes place four or five years before the tooth appears. In rickets the lower jaw hangs and develops poorly, resulting in the receding chin, the angle being obtuse.

Change of voice is caused by nasal obstruction, such as buckling of the septum by a high narrow palate, or by adenoids. If the obstruction is in the nasal cavity, the patient "speaks without his nose."

In such cases "m" become "b," "n" is changed to "d" "ng," to "g", "r" to "rr". If the obstruction is in the naso-pharynx, as in the case of adenoids, the voice loses its resonance. The result is "dead speech." Mal-development of the premaxilla due to delayed eruption of the permanent incisors plays a factor in septal intonations in early childhood.

This unnatural voice has become the voice of a large part of the Northeastern part

of the United States. Rickets with its deformity had a share in the production of the "deformed voice" and others imitated it.

The teeth, the lens of the eye, the skin and the central nervous system are all ectodermic in origin. The eye is the site of serious changes, known as lamellar, zonular, or infantile cataract, frequently and erroneously called congenital cataract. The work of Treacher Collins has described this condition. ("The lens is developed from an invagination of the superficial epiblast so the nucleus corresponds to the epithehal surface. Unlike most epithelial surfaces, cells cannot be cast off, there being no blood vessels, and no mesoblastic tissue inflammation cannot occur. All changes are degenerative").

Xerophthalmia and keratomalica occur from lack of A body, but rickets is not necessarily present.

Xerophthalmia is more prevalent than was formerly supposed. The work of Block of Copenhagen in correcting xerophthalmia is well known.[7] Xerosis (drying of the ocular conjunctiva) is due to lack of Fat Soluble A.[8]

Dr. Grenfell reported that in Labrador "spring staggers," "spring catarrh," and night blindnesss was cured by cod-liver oil or by eating cod-livers. The blindness of the lenten feasts in Russia was found to be a vitamin deficiency.

In the Dooley Hospital, we have observed and reported[15] xerophthalmia, keratomalica and lamellar cataract. The cases were treated with cod-liver oil. The keratomalica was cured. The xerophthalmia was arrested and the sight restored. The lamellar cataract is practically blind.

The "salt eyes" is not due to excess of chlorine, as was formerly supposed, but to a lack of vitamins.

The belief prevails in England that rickets is responsible for a great part of the ear trouble there. The high narrow palate caused by rickets produced buckling of the nasal septum, responsible for so much ear trouble.

The slum shoulder and flat foot are results of rickets.

Flat foot in the infant is constantly seen in rickets. This is especially seen in the well-to-do. Genu valgum frequently accompanies flat foot. The flat foot waddle has been worth a fortune to certain moving picture actors. The flat foot is noticed when the infant begins to walk at twelve to eighteen months.

Rickets is dysgenic and the irregular or narrow pelvis makes more difficulty for the obstetrician and adds to the danger of childbirth.

Rickets with its many symptoms has met its match in cod-liver oil. Rickets will be stamped out when the information now known is more widely broadcasted. From latitude 35 to 60 in the Eastern States cod-liver oil should be used in every case, whether breast or bottle fed, beginning when the infant is three weeks old—except July and August. Cod-liver oil should be used during the first two winters of the child's life. When older, butter may replace cod-liver oil.

Fall babies need more care than spring babies. Two per cent cod-liver oil or 15 per cent butter-fat in the food, will prevent rickets. Lard, pork fat, does not cure rickets. Oleomargarine does not cure rickets. The vitamins of winter milk are much less than grass milk. Butter should be increased in the winter.

The chylomicron content of blood is increased on giving cod-liver oil. There is no marked increase on giving oleomargarine, but marked increase of chylomicron content on giving butter.[7]

There is evidence that the antiophthalmic factor of cod-liver oil is distinct from the antirachitic factor, for cod-liver oil, heated too long, will lose its power to cure xerophthalmia but not the power to cure rickets.[10]

Activated oils are now well established, but experiments show that excessive irradiation will cause inactivation.

Steam slowly destroys vitamin A. The Newfoundland law requires 30 minutes for treatment of cod-liver oil and one-half of the time is carried out with no especial damage.

Mineral acids destroy vitamin A.

Hypovitamins, rather than avitamins, are common causes of lack of appetite in young children. Late rickets is a frequent result. The relation of vitamin B to appetite is of great interest to us. Animal experiments have shown[16] that when the A, B and C bodies are removed from food, dogs refuse in time to eat. The A body does not restore appetite with anything like the effect noticed when B body is given. Meat, milk, oranges, tomatoes and concentrated extract of B body promptly restore appetite. Ox heart is rich in B body and the ox heart is a prized dish in England today. Liver contains A, B and C body in

abundance. One pound of ox liver contains as much vitamin as seven pounds of beef muscle (steak). Beef muscle is very deficient in A, B and C bodies. The glands are valuable storehouses of vitamins. Kidney is excellent, representing five pounds of beef muscle in vitamin. Both milk and oranges contain A, B and C vitamins.

Deficient A body produces reduced platelets, and hence reduced resistance. The writer believes that protective foods will prevent much pneumonia and infections, such as tuberculosis. Almost all cases of pneumonia under six years of age, brought to Dooley and St. Philip's Hospitals in the winter months, have been fed (prior to entering the hospitals) food that is lacking in protective vitamins.

In the recent epidemic of influenza (January, February and March, 1926), all pneumonia cases in Dooley Hospital under four years of age received cod-liver oil three times daily. All cases with pneumonia (ten years the oldest) received orange juice three times daily. There were thirteen cases. The results have been far superior to those obtained from any other treatment we have ever used. There were no deaths. The duration of the disease was short and there were no complications.

Case Reports

Child, four years of age, never took milk, and had complete anorexia. Weight 27 pounds. There had been no gain in weight in two years. Wassermann negative. Urine negative. Feces negative. Heart and lungs negative. Hemoglobin 47. Coagulation time 1½ minutes. Red blood corpuscles, 2,760,000; white 9,400.

Appetite was increased by B body (orange, tomato and milk). Drank one quart of milk daily and was given cod-liver oil and butter freely. No drugs. There was a gain of four pounds in three weeks. Hemoglobin became 70 in the same time. There were two cases similar to this one.

The remarkable work done by Reynolds and Macomber (1921) and Evans and Bishop (1922)[17] shows another vitamin far-reaching in its importance,—X vitamin E. In experimental work, they have proved this the vitamin of fertility. According to their work, animals are made to breed or stop breeding according to the manner of food. When X vitamin E is not given, there is no offspring. When X vitamin E is given, offspring results.

When sterility has been produced, they found that lettuce, meat, whole wheat, wheat germ, rolled oats, dried alfalfa, and large quantities of milk will relieve the condition of sterility. Wheat germ oil is especially effective, even in small doses, to cure sterility. Whole milk, cod-liver oil, orange juice and yeast will not act to cure sterility. The unknown fertility factor cannot be identified with vitamins A, B, C and D, but is essential for reproduction. Note the country versus the town woman with regard to fertility. The necessity for whole wheat or grain cereal is being recognized.

Prevent rickets and much tuberculosis of bone and lungs will be prevented. Tuberculosis starts in early life when rickets has reduced resistance to a minimum.

Finally, note the Southern migration that built up Los Angeles. The cause is climate, sunshine. The largest migration South in the history of the world has just taken place to Florida. Climate and sunshine started the migration. These migrations South from bleak winters are not new. Robert Louis Stevenson explains why the Northern barbarians invaded Rome. "Empty stomachs, sunless winters and aching hearts urged them on."

References.

1. Maffei: "Der Kretinismers in der Norischen Alpen Erlangen, 1844, p. 179.
2. Howland: Medicine, Vol. 2, 1923, p. 351.
3. Uber die Rachitis als Volks Krankheit, Berlin Klein. Wach., No. 9, 1906.
4. Howland: Medicine, Vol. 2, 1923, p. 371.
5. Lukacs: *American Journal of Diseases of Children.* Jan., 1926, Vol. 31, No. 2, p. 239.
6. J. Lavron Dick: Rickets. E. B. Treat & Co., 1922, p. 179.
7. Block, C. E.: Blindness and Other Diseases in Children Arising from Deficient Nutrition. (Lack of Fat Sol. A Factor). *American Journal of Diseases of Children*, Vol. 27, No. 2, p. 139.
8. Grinnan: Xerophthalmia in Infants. *Va. Med. Monthly*, March, 1926.
9. Shroeder Holt: Chylomicron Content of Blood, *American Journal of Diseases of Children*, Vol. 31, No. 2, p. 217.
10. Howland, J.: Medicine, Vol. 2, 1923, p. 357.
11. Turner, A. L.: Nose, Throat and Ear. William Wood & Co., New York, 1925, p. 26.
12. Dick, J. S.: Rickets. E. B. Treat & Co., New York, 1922, p. 21.
13. Dick, J. S.: Rickets. E. B. Treat & Co., p. 18.
14. Forbes, R. P., and Green, B.: Rickets in Colorado. *Archives of Pediatrics*, Vol. XLIII, No. 2, Feb., 1926, p. 131.
15. Grinnan, St. George T.: *Va. Medical Monthly*, March, 1926.
16. McCollum and Simonds: The Newer Knowledge of Nutrition. 3rd Edition, pg. 219.
17. Ibid. Pg. 289.

925 *West Grace Street.*

NOVASUROL AS A DIURETIC IN CASES OF EDEMA.*

By W. P. ARGY, B. S., M. D., Washington, D. C.

The internal use of calomel as a diuretic was suggested by Jendrassik[1] in 1886, and since that time there have been sporadic references to its use, in the literature, with occasional surprising results in urine elimination. Cushney[2] advised its use but in small doses, attributing its effect to its direct action upon the renal epithelium.

In 1917 Karl Zieler[3] introduced novasurol as a new mercurial in the treatment of syphilis. In 1920 Saxl and Heilig,[4] while treating cases of aortic disease complicated with cardiac decompensation, found that there was an enormous secretion of urine in those cases in which novasurol was used. Since that time there have been many reports in the literature of cases of edema treated with this drug, with marked beneficial results in most instances.

Novasurol is a complex non-ionizable salt containing 33.9 per cent mercury and is employed in a 10 per cent neutral sterile solution obtained in ampules containing 1.2 c.c. It is a double salt of sodium mercurio-chlor-phenoxylacetate combined with diethyl barbituric acid. It is fairly soluble and is used by either intramuscular or intravenous injection. In cases where there is a marked anasarca, the latter method is preferred.

The action of the drug is not definitely known. Nonnenbruch,[5] Brunn,[6] Saxl and Heilig,[7] Bohn,[8] and Keith and Whelan[9] have demonstrated that there is an increase in the secretion of chlorides after an injection of the drug. They conclude that its action is biochemical, and, furthermore, that this takes place in the tissues, tending toward the extraction of water and sodium chloride from their colloidal combination. Saxl and Heilig[7] have further shown that water and sodium chloride is quickly excreted after injection in cases of cardionephritis and that the diuretic effect depends but little upon the amount of sodium chloride and water in the blood. In other experiments they found that the administration of atropine and sodium chloride hindered the diuretic action of the drug. Cushney[2] states that atropine has little if any direct effect upon the secretion of urine, and he further states that atropine lowers the blood pressure as a result of its action in dilating the capillaries. Loeb[10] has demonstrated that a lowering of the blood pressure and dilatation of the capillaries increases the permeability of the capillaries, thus favoring the further transudation of fluids from the blood to the tissues, and thereby hindering the reverse flow of fluids and salt from the tissues to the blood. It seems, therefore, that these findings would force one to conclude that the diuresis produced by novasurol is due to a biochemical reaction taking place in the tissues. On the other hand, Muhling[11] and Bohn[8] conclude that a more or less intact tubular apparatus in the kidney is necessary for the increased elimination of fluids. This seems logical but does not necessitate the action of the drug upon the renal epithelium. It will be demonstrated later that prolonged use of the drug results in a gingivitis, stomatitis, or colitis, and this no doubt is due to the action of mercury in its ionizable form. For the present and for practical purposes, we may assume, because of the action of the ionizable forms of mercury on the kidney, that the action is principally biochemical, that is, mobilizing the water and salts in the tissues, thereby producing a plethora, but that this factor, probably combined with a direct action of the drug on the kidney, tends to favor elimination.

All observers believe novasurol to be nontoxic. Kollert,[12] upon examination of the kidneys of two patients post-mortem, concluded that there were no pathological evidences which could be attributed directly to the action of the drug. Marlinger [13] administered novasurol in a case of secondary syphilis, which resulted fatally, but he does not believe that the death could be attributed to the action of the drug.

Haggeney,[14] Saxl and Heilig,[4] Gilcrist,[15] Rowntree and Barrier,[16-17] and others have used novasurol in cases of edema of cardiac and renal origin with marked beneficial results. The effects were noted within twenty-four hours. There was marked improvement in the general condition of the patient with the production of an astounding diuresis. The average elimination was between 4,000 and 6,000 c.c. Brunn[6] reports an elimination of 8,500 c.c., and Hassencamp[18] 11,500 c.c. after the adminstration of the drug. Rowntree,[16] Barrier,[17] and Saxl[7] report a concomitant increase in the elimination of sodium chloride. Keith, Barrier, Whelan and Rowntree[17-9] report an increase in the elimination of nitrogen. Gilcrist[15] found that the increase in the vital capacity of the lung after the administration of novasurol in cases of edema of cardiac ori-

*Read before the Medical Society of the District of Columbia, at Washington, D. C., May 19, 1926.

gin, was about 35 per cent. In two of his cases in which there was no relief from the edema, the vital capacity was below 28 per cent. He therefore concluded that the drug would not be effective when the myocardial degeneration was of such an extent that the heart would not take advantage of the opportunity offered.

Hassencamp[18] advised against the use of the drug in cases of ascites due to portal cirrhosis, claiming that in his cases there was an increase in the icterus together with the onset of nausea and vomiting. On the other hand, Rowntree and Barrier[17-16] have used it in cases of Banti's disease, cirrhosis of the liver, polyserositis and polycythemia, with excellent results in nineteen of the twenty cases treated. They found that there was an increase in the jaundice together with nausea and vomiting in one of their cases, but this patient had had a previous attack of colitis. Their conclusions were that the results were unquestionably better than those observed in other similar cases with other methods of treatment. Fodor[19] also found it to be of benefit in cases of ascites due to cirrhosis and polyserositis, providing there was a good blood pressure.

Discussion of Cases Treated

Eleven cases comprise the bases of this study. The etiological factor in all cases was cardiac decompensation, while in nine cases there was an associated nephritis. Of the cardiac lesions, six were due to aortic disease, all of which could be attributed to syphilis; two had mitral diseases, one of which presented a history of a previous attack of acute rheumatic fever, and three had a myocarditis with an associated auricular fibrillation. In all except one case the nephritic lesion was a chronic parenchymatous nephritis. The ages of the patients varied between twenty-seven and seventy-four years. In all except one case the edema was marked, approaching or simulating a general anasarca. The edema had been in evidence for from two weeks to eight months. Two of the cases gave histories of three previous attacks of cardiac decompensation; one had had two previous attacks. There were nine males and two females. All of the patients had a low grade mentality and it was difficult to obtain absolute co-operation in the treatment. The nephritic cases were associated with a marked hypertension. The routine urine analysis varied, but in most instances there was an albuminuria with a varying cylindruria.

Therapeutic Measures

Diet: A simple diet was used. In all instances the patient was given water, 1,500 c.c. daily, for the first forty-eight hours, this being followed with milk, 1,500 c.c. daily, for the next seven days. Toast was added to the diet if so desired. Although the salt content of this diet was relatively high, it was, however, selected because of its simplicity and of the ease with which the fluid intake could be controlled.

Ammonium Chloride: In five of these cases ammonium chloride was given by mouth in doses of Gm. 3, daily, for a period of from six days to two weeks. Rowntree[17] found that the concomitant use of this drug enhanced the results, but he warns of the danger associated with its prolonged use, because of the tendency toward the production of an alkalosis.

Novasural: Novasurol was injected intramuscularly or intravenously in doses of 1.2 c.c. The interval between doses varied from three to six days.

Other Forms of Medication: In the cases of cardiac decompensation, tincture of digitalis was administered in dram doses, at four hour intervals, and continued until the pulse rate had fallen below 90 per minute, or until the patient had received his specific dose of the drug, as computed by McKenzie. Morphine sulphate was used in some cases where the restlessness was severe. In one of the cases where the effects of novasurol were not marked and where the patient had a marked thickening and dryness of the skin, thyroid extract was given in ¼ gr. doses three times a day, with an increase in the diuresis to enormous proportions and a subsidence of the edema.

Clinical Results

In all of the cases striking diuretic effects were obtained. In the eight cases in which the urinary output was determined before treatment was instituted, there was an elimination of about 560 c.c. of urine in twenty-four hours. In the five cases in which novasurol was administered alone, that is without ammonium chloride, the elmination of fluids averaged 2,410 c.c. for the twenty-four hours immediately following the administration of the drug. While this does not compare with the results obtained by other authorities, it must be remembered that these patients were suffering from advanced myocardial degeneration and in most instances the elimination was low, from extensive kidney damage of long standing.

In those cases in which ammonium chloride was added to the routine procedure, the elimination of urine averaged 4,480 c.c. in twenty-four hours, and the highest amount eliminated was 5,790 c.c. in the twenty-four hours immediately following administration of the drug. We have found that after the use of ammonium chloride and caffeine citrate or theocin, in similar cases, the elimination did not exceed 2,000 c.c. in twenty-four hours, this being only 500 c.c. in excess of the fluid intake.

The results obtained in one of our cases are typical of the effects of the drug from a clinical standpoint.

The patient had a permanent auricular fibrillation with hypertension and chronic glomerular nephritis. She had had three previous attacks of cardiac decompensation, from which she recovered, in each instance within two months' time. She finally developed signs and symptoms of a deficient cardiac reserve power and was advised to remain in bed for a period of one month. During this time, however, she became progressively worse and in six weeks' time presented the picture of general anasarca with cyanosis and marked signs of myocardial degeneration. Theocin, caffeine citrate, and ammonium and calcium chloride produced no relief. She was finally placed upon a milk diet for a period of one week and was then given one c.c. of novasurol. A twenty-four hour estimation of the urinary output could not be obtained, but there was a noticeable increase in the amount excreted, and within forty-eight hours there was an absolute subsidence of the edema with marked improvement in the patient's general condition. Three weeks after the single injection of novasurol, the patient was permitted to go to her home, but two months later she again developed a general anasarca with ascites, from which no relief could be obtained, even after repeated injections of novasurol, although after each injection there was a decided increase in the urinary output.

All of our cases, with one exception, had a profound anasarca, from which it was thought there could be obtained no relief. Three of the patients died during the course of treatment. Two of these died within thirty-six hours after admission. Of the remaining, four did not respond to treatment in that there was no subsidence of the edema, but in all cases there was a marked increase in the urinary output. In one of these four, there was an increase in the urinary output from 580 c.c. before, to 1,900 c.c. after the injection of novasurol, and to 3,850 c.c. after the administration of thyroid extract. Three of the patients did not co-operate in the treatment. Two of the cases may be listed as cured. One had a beginning decompensation, his edema subsiding after a single injection of 0.5 c.c. of novasurol, and after a strict regimen of rest for one month, together with small doses of digitalis, he was able to return to his home; the second case was discharged from the hospital as cured one month after his third injection, but he immediately went to work, and as a result there was a recurrence of the edema which eventuated in death.

There were no evidences in any of these cases of toxicity which could be attributed to mercurial poisoning. In two of the cases there was a rise in the diastolic pressure. Both of these cases had had parenchymatous nephritis before treatment was instituted. The increased pressure might be attributed to an increase in the glomerular pathology. One patient had a severe colitis and proctitis following administration of the drug. Rowntree[17] and others report instances where a gingivitis had been produced.

Conclusions

We have found novasurol to be the most powerful diuretic in the armamentarium of the physician today. It is most effective in cases of cardiac decompensation, chronic nephritis and in ascites due to portal obstruction. Combined with ammonium chloride its effects are enhanced. Due to its mercurial content it should not be used in cases of colitis, gingivitis, stomatitis, or acute parenchymatous nephritis. Although it has been stated that there is no deleterious effect of the drug upon the kidney, in two of our cases there was a permanent increase in the blood pressure, which leads us to believe that its use in all of the nephritides should be with caution.

Because of the extensive mobilization of fluids and the resultant transudation into the blood stream, with the production of an hydraemic plethora, its use in cardio-nephritis should be with caution and in small doses, inasmuch as there is the danger of producing an acute cardiac dilatation or possibly rupture of an already damaged heart muscle.

Bibliography.

1. Jendrassik: *Deutsches Archiv. für Klinische Medizin;* xxxviii.

2. Cushney, A. R.: Pharmacology and Therapeutics; Lea and Febiger, 1918.
3. Zieler, Karl: Novasurol, Ein neues Quicksilber salz zur Syphilis Behandlung mit Bermerkungen uber die Grund satze der Quicksilber Behandlung; *Munchen Med. Wchnschr.;* 2; 1257; 1917.
4. Saxl, Paul; Heilig, Robert: Ueber die diuretische Wirkung von Novasurol und anderen Quicksilber injectionen; *Wien kiln, Wchnschr.;* 33; 943, 1920.
5. Nonnenbruch, W.: Uber die Wirkung des Novasurols Auf Blut und Diurese: *Munchen Med. Wchnschr.;* 2; 1447; 1921.
6. Brunn, Fritz: Zur Wirkung des Novasurols als Diuretiken; *Munchen Med. Wchnschr;* 2; 1554; 1921.
7. Saxl, Paul, and Heilig, Robert: Ueber die Novasurol diurese; *Wiener Archiv. Fuer Innere Med.;* 3; 141; 1922.
8. Bohn, Hans: Experimentelle Studien uber die Diuretische Wirkung des Novasurols; *Klin. Wchnschr.;* 2; 352; Feb. 19, 1923.
9. Keith, Barrier, and Whelan: The Effect of Novasurol on the Normal Composition of the Blood and Urine; *Am. J. Physiol.;* 72; 195; 1925.
10. Loeb, Leo: Edema; Medicine Monographs; Williams and Wilkins; 1923.
11. Muhling, Adolf: Studie uber die diuretische Wirkung sweise von Quicksilber Praparat, Novasurol; *Munchen Med. Wchnschr.;* 2; 1447; 1921.
12. Kollert, V.: Ueber die diuretischer Wirkung des Novasurols; *Therapie des Gegenwort;* 61; 22; 340; 1920.
13. Marlinger: Todesfall nach eine Novasurol injection bie Lues; *Med Klinik;* 18; 113; 1922.
14. Haggeney: Novasurol als Diuretikum; *Med. Klinik;* 18; 48; 1922.
15. Gilcrist, A. R.: Novasurol, a New Diuretic; *Lancet;* ii; xx; 1925.
16. Rowntree, S. G.; Barrier, C. W.: Diuretic Effects of Novasurol; Collected Papers of the Mayo Clinic; xvi; 1924; 221.
17. Rowntree, S. G., Keith, N. W., and Barrier, C. W.: Novasurol in the Treatment of Ascites; *J. A. M. A.;* 85; 16; 1187; Oct. 17, 1925.
18. Hassencamp, E.: *Zentralbl. f. Inn. Med.;* 6; 1922.
19. Fodor, E.: Ueber das Indikations gebeit des Novasurols als Diuretikum; *Med Klin.*, Berl.; xix; 684; 1923.

1718 *Rhode Island Avenue.*

THE CORRELATION OF X-RAY FINDINGS AND CLINICAL FINDINGS, ESPECIALLY IN DISEASES OF THE CHEST.*

By WILBUR M. PHELPS, M. D., Staunton, Va.
Roentgenologist, King's Daughters' Hospital.

The art of distinguishing one disease from another had its inception behind the veil of antiquity. The determination of the nature of disease was an empirical development of the centuries; but differential diagnosis is of comparatively modern origin. It is only within the past century that direct diagnosis and pathologic diagnosis were added to that which was based solely upon the symptoms shown during life, irrespective of the morbid changes producing them.

Twentieth century medicine demands complete scientific facts as a basis of diagnosis. We realize that diagnosis is difficult, even with the aid of all modern instrumentalities, and that the necropsy often reveals the fallibility of our most efficient efforts along that line. If the diagnostician fails, after bringing to the aid of his judgment all possible data available through present day methods of examination, then his conscience may be clear though his pride be lacerated.

One of the most valuable diagnostic agencies at the present time is the X-ray; but both its possibilities and its limitations must be thoroughly understood by the general diagnostician, and its correlation to other laboratory and physical findings established. He must realize that the roentgenogram is not a picture, but a shadow graph of the parts examined, and that the value of the examination will be proportional to the skill, judgment and interpretative ability of the roentgenologist. The latter must translate his observations into terms of normal or pathological conditions to enable the diagnostician to visualize them.

The roentgenological findings must be correlated with the other physical and clinical findings to make the diagnostic picture complete; and the evidence presented by each diagnostic procedure carefully considered before an opinion of value can be rendered. If a discrepancy develops in the findings, this should be worked out.

The clinician must bear in mind that no one diagnostic procedure is infallible, and the X-ray is not an exception to the fact. The roentgenogram records shadows of the parts examined, and these shadows will depend upon the relative density of the matter they traverse. The interpretation of the roentgenogram depends upon the variations in shadows produced by the normal or abnormal structures examined.

If a shadow is found in a part that should not give one, or if there is an absence of a shadow where one should exist, the roentgenologist knows he has found an abnormal or a pathological condition. His next step is to analyze the shadow in an effort to identify the nature of the pathology.

There are a great many conditions in which

*Read before the Medical Association of the Valley of Virginia, in Harrisonburg, May 27, 1926.

the X-ray findings are definite and positive, and many in which the roentgenogram is the only possible method of revealing the presence of a pathological condition; but there are also a great many conditions in which the roentgenologist needs and should have the co-operation and assistance of the clinician before formulating his conclusions. This is especially true of chest pathology. An outline of the following case will illustrate this statement:

A boy of eighteen years of age had symptoms of influenza—pulmonary type. Onset sudden, without chill, but with temperature ranging from 101 to 103; pulse 90 to 110. Complained of uncomfortable feeling in region of lower right chest; very slight cough; no expectoration. Physical examination of chest negative, except for scattered rales heard in upper portion of chest on both sides. There were no definite pathological breath sounds. Respiratory rate varied from 28 to 32. There was a leucocytosis of 19.000, with 94 per cent polys. The case had the appearance of pneumonia, but the absence of ausculatory signs caused doubt. A roentgenogram of the chest was made and showed a dense area, extending outward and downward from the root of the lower right lobe of the lung. Because of the location of the lung density, the roentgenologist would have hesitated in pronouncing the case pneumonia, as other pathological conditions could produce the same shadows. The clinician was not prepared to make an unqualified diagnosis of pneumonia, because of incomplete physical findings. But when the roentgenologist and the clinician co-operated in this case, the irregular manifestations were reconciled, and a positive diagnosis of lobar pneumonia was made, and justified by the course of the disease. After convalescence was established, another roentgenogram was made and showed that the shadow found in the first examination had completely disappeared.

The majority of chest examinations are made for the purpose of diagnosing or excluding pulmonary tuberculosis, and in these cases there should be close co-operation between the clinician and the roentgenologist, to avert an unjustified sentence of present tuberculosis, on the one hand; or, on the other, the risk of overlooking an active lesion. The roentgenogram alone cannot determine the clinical importance of the pathology found. As a rule in early tuberculosis, properly made films will reveal to the experienced roentgenologist more evidence of pathology than has been found on clinical examination. Undoubtedly, the X-ray furnishes the most valuable means of following the progress or recession of the disease. Fibrotic changes, clearing areas, cavitation, extension, calcification, all are capable of demonstration on the X-ray film.

The roentgenogram is also an aid in prognosis, as the evidence of obviously old and healed lesions is of favorable prognostic import, even in the presence of presumably active ones, as indicating that the patient has been able on a previous occasion to overcome an active infection.

The determination of the presence or absence of fluid in the pleural cavity is ordinarily easy by employing percussion, palpation and auscultation, and in this condition radiography is usually resorted to in order to confirm the physical findings. It must be remembered that no roentgen differentiation is possible between the different types of fluid collections, as pus, serosanguineous fluid, and the clear collections of fluid, all give the same X-ray density. However, the evidence of fluid is always recorded on the film and its presence or absence can be positively determined and localized.

We must not overlook the fact that clinical signs of fluid may be present without the existence of any effusion, nor that an effusion may be present without giving stethoscopic signs.

Barjon, speaking of the first condition, or pseudo-effusion, as he calls it, says:

"The patients in question have all the signs of pleurisy of the large cavity; dullness, fremitus, abnormal breathing, egophony and aphonic pectoriloquy, and yet there is no pleural effusion.

"This phenomenon may be present under many circumstances, and radioscopic examination has here a great value. It demonstrates, in fact, that in spite of these deceptive symptoms, the pleura is free of fluid, the hemithorax is perfectly clear from apex to base, the diaphragmatic dome stands out clearly, and, though the respiratory movements may be weak and lessened in extent, the diaphragm is not completely immobilized. It is certain, therefore, by the X-ray examination that there is no effusion.

"The negative findings ought to suggest a positive diagnosis, if we take into consideration all the indications furnished by the history, clinical examination, the development of the disease and radioscopic examination.

"Grancher described some years ago, under

the name of 'spleno-pneumonia' a clinical syndrome, which, under the appearance of pleurisy, is not accompanied by any effusion. It is a particular condition of the lung in which, consequently, thoracic symptoms always ought to predominate. It is produced in bronchitis, pulmonary congestions, pneumonias, and, finally, it is met with in the course of general infectious diseases, such as rheumatism and typhoid fever.

"Barjon drew attention sometime ago to two cases of sub-diaphragmatic affections, producing this complete syndrome without there being, however, any fluid in the pleura. One of these patients had an abscess of the liver, the other suppurated cyst of the same organ. Similar facts have been observed in certain cases of sub-phrenic abscess."

I remember seeing a case in the Boston City Hospital a number of years ago, that impressed me with the value of roentgenological examination in doubtful conditions having symptoms referable to the lower chest or diaphragmatic region. The patient presented what I thought to be rather indefinite, but suggestive symptoms of gall-stone. The hospital surgeon was quite convinced and decided to operate without having an X-ray examination made. A normal gall-bladder was found and no gall-stones. A roentgenographic examination, after operation, revealed a pleurisy with effusion at the base of the right lung; and a post-mortem confirmed the findings.

"In a total pleural effusion the only clinical signs may be confined to dullness with absence of fremitus. On account of the compression of the lungs, no abnormal breathing, egophony or aphonic pectoriloquy is heard. In such a case the most important radiographic sign, beside the total obscurity of the hemi-thorax, is the displacement of the heart and mediastinum by the fluid pressure."

The fluoroscope reveals one very interesting and important fact that cannot be determined by any other means of examination, and that is, in all forms of pleurisy there is absolute immobilization of the diaphragm on the affected side. This diaphragmatic paralysis develops before the effusion starts, and persists after its disappearance. It is a curious fact that the movements of the diaphragm are retained in the presence of even abundant pleural effusion, not associated with pleurisy. Such has been found true in cases of hydro-thorax accompanying Bright's disease.

The necessary limitation of time for presentation of papers today precludes my discussing the many other pathological chest conditions in which roentgenological examination is of first importance in the diagnostic procedure.

Let me emphasize at this time that the exact diagnosis of chest pathology is not a simple thing, and that both the clinician and the roentgenologist should have the benefit of all possible clinical, physical and laboratory data in formulating their opinions; and even then the post-mortem findings may disagree with the ante-mortem conception of the pathology present.

We have not yet reached a hundred per cent efficiency in ante-mortem determination of chest pathology. This fact is probably not remarkable when we consider that less than a century and a half ago not even the function of the lungs was understood. Three generations removed from us our predecessors in medicine were in darkness regarding the physiology of the lungs, and so, of course, could not comprehend pulmonary pathology.

Let me quote a few paragraphs from a textbook I possess, written by W. Cheselden, Surgeon to His Majesty's Royal Hospital at Chelsea, Fellow of the Royal Society, and Member of the Royal Academy of Surgeons at Paris, and published in 1778. In his Chapter on the Pleura, Lungs, etc., he states:

"The lungs are composed of two lobes, one seated on each side of the mediastinum. They are each composed of very small cells. The figure of these cells is irregular, yet they are fitted to each other so as to have common sides. Into these cells the blood vessels discharge a large quantity of lymph, which at once keeps them from being dried by the air and makes a large and necessary discharge from the blood.

"The known uses of the airs entering the lungs are to be instrumental in speech and to convey effluvia into the nose; but the great use of it by which life is preserved I think we do not understand. By some the force of the air is thought to separate the globules of the blood that have cohered in the slow circulation through the veins. Yet it remains to be proved that these separations are made by the force of the air. Besides, if pressure of the air in the cells of the lungs is the only use of it. I do not see but enough of that may be had while a man is hanging, if the muscles of the throat do but act upon the air which was left in the thorax when the rope was first fixed, and yet death is brought about by hanging no other way than by interrupting of the

breath as I have found by certain experiments."

Again, he says:

"Others have thought that the air enters the blood vessels from the cells in the lungs and mixes with the blood; but this opinion, however, probably wants sufficient experiments to prove it. Air being found in the blood, as it certainly is, is no proof of its entering this way because it may enter with the chyle."

Again, and very interesting as an evidence of ignorance of pathology, he says:

"Adhesions of the lungs to the pleura are in men so common that I know not how to call it a disease, they being found so more or less in most adult persons and without any inconvenience, if the lungs are not rotten."

And now, leaving the conceptions of Dr. Cheselden's time, we must not forget that all of the facts we now possess regarding chest pathology and its diagnosis have been developed during the past hundred years, and advanced as this knowledge is since the day of Cheselden, there is much to be desired. We are all striving to attain the maximum in diagnostic efficiency, and the only way in which we may succeed is to obtain and correlate complete data in each case. This data will be inexcusably incomplete unless it includes roentgenological findings, especially in diseases of the chest.

Discussion.

Dr. Noland M. Canter, *Harrisonburg*:—The precise value of the use of the X-ray as a diagnostic procedure in pulmonary lesions is a matter of differing opinions.

The paper just read has presented the subject in an admirable manner, and I feel gives the proper appreciation of the use of the X-ray in this important field.

Some regard the X-ray as a means of confirming the presence of disease and revealing its extent and the presence of complications. And this is certainly true. Others, however, look upon this method as an invaluable means of disclosing small peripheral and large central lesions which have in some cases reached the stage of consolidation, and even cavitation sometimes, without the corresponding clinical signs having been detected.

I am confident that the X-ray discloses lesions otherwise not found at an early date. At the Walter Reed Hospital during the influenza epidemic in 1918 routine bedside X-ray examinations were made of all patients having any respiratory symptoms. Many cases showed involvement in the region of the hilus which proved to be acute inflammatory infiltration, which Selby called "hemorrhagic pneumonitis." These lesions were often not found clinically.

A case of a student nurse, who came for annual physical examination, presented an unusual lesion. There was a definite area of consolidation in the lower, outer portion of the right upper lobe, about the size of a five cent piece. Elsewhere the lungs were remarkably clear. Although the lesion was an atypical one, we called the attention of the clinician to it, classifying it as a tuberculous lesion. However, no attention was paid to this. Three months later the lesion had enlarged peripherally, but no symptoms of involvement had been noted clinically and the patient seemed quite well. A few weeks later she began to have an elevation of temperature, and further examination revealed softening in the center of the area, and a dissemination of the process. This young lady had developed a wide spread tuberculosis.

Another patient who recently came to my attention was a young woman who began to complain of being easily fatigued. She had a slight elevation of temperature. No clinical evidence of lung involvement was obtained. The X-ray revealed a nebulous area of density in the left apex, which was thought to be due to tuberculous infiltration. Elsewhere the lungs were clear. The patient was treated for tuberculosis and showed improvement, and it was some months after discovery of the lesion with the X-ray that any signs could be made out. So this young woman had the benefit of early treatment, because the X-ray showed definite pathology.

I do not think we can over-estimate the value of the X-ray in the diagnosis of lung conditions when this method is in the hands of a careful, well-trained, and not too enthusiastic roentgenologist. A colleague once talking with a clinician regarding a case under discussion, used the following expression: "Don't read pathology into the films." By this he meant to warn him against the error of interpreting all shadows as conclusive evidence of lung pathology.

One may safely conclude that the X-ray forms a valuable link in the chain of evidence. The correlation of the clinical findings and those of the X-ray is the best method of determining the presence and the extent of pulmonary lesions.

I wish to congratulate Dr. Phelps on his excellent paper.

Dr. H. Grant Preston, *Harrisonburg*:—Dr. Phelps' paper is very interesting to me. Recently, I had a very instructive series of cases along this line. Most of these cases complained of cough, expectoration of large amounts of purulent material, and had all been diagnosed as tuberculosis by one physician or another. Most of them had been treated in some sanitorium, where frequently no definite diagnosis of tuberculosis could be made.

All of these cases showed signs of frank sinus infection, which was purulent in type, and all had at least one antrum of Highmore involved. The pharynx and larynx were chronically inflamed and the throat irritable. In most cases the tonsils had been removed, with the promise that this would relieve the "catarrh."

The clinical chest picture was that of a chronic bronchitis, with course and fine rales throughout. Some showed asthmatic, emphysematous, and even bronchiectatic changes.

The X-ray examination was essential to make a diagnosis, for, while the picture was characteristic of chronic bronchitis, there was much soft infiltration, glandular involvement, and very little or no parenchymatous infiltration. On the whole, if the chest picture had been due entirely to tuberculosis, the patient would have been in a moribund condition.

Of course it is possible to have a non-specific pulmonary infection superimposed upon a tuberculous one, in which the X-ray helps but is not conclusive. However, in most of my series, repeated sputum examinations and tuberculin tests proved negative.

X-ray, clinical picture, and physical findings separately are not sufficient to make a diagnosis in these cases, but with correlation of their methods, one is able to place them in their proper category, and response to treatment of the sinus condition is marked.

TREATMENT OF INCIPIENT CATARACT.*

By HUNTER H. McGUIRE, M. D., Winchester, Va.

This communication is concerned with the management of those cases of beginning lenticular opacity in the adult which have not reached the stage of what is commonly termed mature cataract and which are characterized either by the presence of striae in the cortical layers of the lens or by a distant clouding of the central nucleus.

Recent studies of the crystalline lens by means of ocular microscopy and the slit-lamp of Gullstrand have given conclusive evidence that many cases of lenticular opacity never reach the stage when surgical intervention becomes necessary, and in the routine use of this instrument one is amazed to find the great number of lenses which show well-defined opacities in one form or the other, which either never develop into true cataract or completely disappear under appropriate treatment. In view of these findings, the impression is gaining ground that cataract is frequently a toxic process and is not solely a senile degenerative change. Cataract must, therefore, be regarded as a diseased condition of the lens secondary to some local manifestation within the eye, or to constitutional disturbances. Concrete examples of this fact may be cited in the development of lens changes from uveal tract inflammatory processes and glaucoma and the well known tendency to cataractous development in diabetics.

In a recent paper on this subject, Peter makes this significant statement: "To the thoughtful surgeon, there must be an inquiry as to the reason for spontaneous arrest of a cataractous process, which under ordinary circumstances, or at least in many instances, goes on to maturity. Is it by mere chance that lenticular opacities fail to increase, or is there some local or general condition which ceases to be operative so that coincidentally the cataract comes to a standstill? If the latter view is accepted, it is but a logical step to consider what may be done to assist nature in ridding the body of that which stands in direct or indirect relation to the onset and development of the cataract." Long before the days of ocular microscopy, many keen observers, notably, C. F. Clark and Samuel Risley, pointed out that cataract in the adult was more or less closely related to uveal tract disease, and emphasized the importance of correcting the underlying inflammatory condition in the attempt to arrest the sclerosing process in the lens. Clark, for example, in a study of several thousand cases, found comparatively few cases of senile cataract which went on to maturity, and in those which did reach maturity he was confident that there was coincidentally an increase in the uveal pathology. Risley, likewise, in a study of eighty cases, found 75 per cent suffering from refraction errors; vitreous opacities were present in twenty-two cases; choroiditis in fifty-eight, and inflammatory conditions of the conjunctiva and lachrymal sac in forty-five cases. More recent studies of incipient cataract have been presented in papers by Edward Jackson and Allen Greenwood. Jackson's notable paper before the American Ophthalmological Society in 1924, "Senile Cataract under Hygienic Care," contained carefully compiled notes of 539 consecutive cases seen in private practice. In a general summary of these cases it was evident that in 14.5 per cent of the patients under observation, an average of almost five years, vision in the better eye remained standard or above. That in twenty eyes there was a net increase of vision of more than 0.1 in 9 per cent, and that in one hundred eyes in which vision did diminish such diminution was less than 0.1 per year in 80. The average yearly diminution was really but little over 1/20. His conclusions, and the mature judgment of that eminent teacher should carry great weight, are as follows: "For a patient of the average age —of this series 65.35 years—presenting commencing senile cataract, the probability is that under proper hygienic care it will be twenty years before the cataract becomes mature, and fifteen years before he loses the power of reading ordinary print. The average expectancy of life at sixty-five is ten years. This agrees with the relatively small number of people who become blind from cataract."

When we seriously consider these facts, coming from a man like Jackson, and, further, corroborated by studies of the lens with the slit-lamp, it seems to me that our prognosis in cases of so-called incipient cataract should

*Read before the Medical Association of the Valley of Virginia, in Staunton, September 30, 1926.

be extremely guarded. The very term cataract, utterly devoid of scientific meaning, carries terror to the heart of the layman. It means for him impending blindness with all the horrors such a condition presents, and it immediately produces a state of mental depression which, in many instances, is never overcome. The brutal custom, so long in vogue in ophthalmic practice, of bluntly informing the patient that he has cataract and must wait for it to ripen and become totally blind before recovering his vision, is, happily, being wiped out and has no place in scientific opththalmology. I do not mean to convey the impression that if I discover opacities in the lens, I fail to explain to the patient the cause of his diminished visual acuity. This must be done in all instances, but it can be done in a perfectly clear and scientific way without mentioning the word cataract and the confidence of the patient will be retained and he will be made happy.

It goes without saying that the exact condition of affairs should be stated to the family physician and his co-operation obtained in the management of the case, and, further, I have found it advisable to inform some member of the patient's family of the nature of the condition, with instructions not to refer to cataract when family discussions are in progress. If you omit these precautions, the next learned gentleman who by chance looks into the eye might inadvertently exclaim, "Oh! you have cataract, and I am greatly surprised that your other doctor failed to find it," and the original examiner is immediately brought into disrepute.

The treatment of so-called incipient cataract will be influenced to a large extent by the general physical state of the patient, by the local conditions within the eye, and the character and location of the lenticular opacities. A thorough search should always be made for focal infections and as far as possible these should be removed. The amount of blood sugar should be estimated and, if in excess, efforts should be made to reduce it. In fact, a thorough physical examination should never be omitted.

The examination of the eye should be made with painstaking care. Subjective tests for visual acuity should always be supplemented by visual field studies, unless the lens opacity is sufficiently developed to interfere with an accurate recording of the fields. The ophthalmoscopic examination should never be undertaken without a widely dilated pupil. This is essential if one is to study the periphery of the lens and to make a searching investigation of the eyeground. It must be constantly borne in mind that macular lesions, extensive chorioretinal changes, and sclerotic changes in the vascular system of the retina will frequently account for a poor result in the treatment of incipient cataract and, after the extraction, of mature cataract.

For the examination of the lens itself, in my opinion, there is no method comparable to the microscope and slit-lamp illumination. The wealth of information gained from such a study is of immense practical value in the treatment of any type of lens opacity. Under high power the ability to observe the capsule of the lens, to note its thickness, its wrinkling, and its attachments to the underlying substance means much in rendering a favorable or unfavorable prognosis. The ease with which a thin beam of light can be directed throughout the lens substance giving a perfect optical section, bringing into view the nuclear surfaces with a clear definition of the segments of the lens, affords a method of investigation which cannot be obtained with the ophthalmoscope alone. By such a method one is able to differentiate the various types of opacity, whether they be vacuoles, water fissues, or dot-like formations in the cortex or central nucleus, and to accurately locate the depth and extent of such opacities.

The first step of importance, as far as the local treatment of beginning cataract is concerned, is the accurate correction of any error of refraction which may be present. This has a two-fold effect. First, it will, in many cases, materially improve vision, and, second, it promotes rest of the ocular structure in correcting eyestrain, a potent factor, as Risley pointed out years ago, in the production of uveal disturbance. Inasmuch as during the sclerosing process the curvature of the lens is materially altered from time to time, it is usually necessary to make more frequent changes in the correcting glasses than under ordinary conditions, and the patient must be informed of this fact.

General hygienic measures in the care of the eyes should be adopted and the patient given instructions as to the use of the eyes, and under what conditions. While no fixed rules can be laid down for each individual

case, the ability to use the eyes for short or long periods will depend upon the location and extent of the lenticular opacity. If there has been a rapid failure of vision and the clearest part of the lens is decidedly hazy, interruption of near work, for a time at least, should be recommended. As a general rule, however, I should say that as long as a patient, under good light conditions, can read ordinary print without undue effort, it is far better to allow use of the eyes for certain periods, and the individual who depends largely upon reading and close work for his or her happiness in life will be saved the inevitable mental depression which results when such habits are restricted. It should be constantly borne in mind that, in most of these cases, we are dealing with old people whose habits are fixed, who to a greater or less extent are the victims of other physical infirmities, and whose contentment in their declining years will depend largely upon the advice and attitude of their medical advisor. Too much restriction in their daily routine and too much medical advice, even though based upon scientific reasoning, sometimes thwart our very best efforts in helping them over the rough pathways at the end of their journey.

Of the other measures advised from time to time for the arrest of cataract, many have been irrational and without scientific foundation. We are all perfectly familiar with the many so-called "cataract cures" which have been exploited for many years by an army of quacks, whose victims we daily come in contact with and whose methods are simply mentioned to be condemned. The definite object in view in the treatment of incipient cataract is an improved nutrition of the ocular tissues and an absorptive action upon the lenticular opacities. Nothwithstanding a few reports to the contrary, the concensus of opinion seems to prove, in the light of our present knowledge, that no remedy which has been advocated will absorb opaque striae in the lens. On the other hand, it is believed that a diffiuse lenticular haze may be removed to a remarkable extent by the local use of certain agents. The method which produces such a result consists in creating a vascular reaction in the conjunctiva and surrounding tissues. This is usually referred to as a lymphagogue action, and has for its object an improved nutrition of the ocular tissues and the promotion of osmosis and endosmosis. For the purposes of inducing such a reaction, the local use of sodium and potassium iodide, dionin and subconjunctival injections of cyanide of mercury have been extensively employed in recent years.

Lt. Col. Smith, of the British Army, whose cataract work in India is so well known, was the first to suggest subconjunctival injections of cyanide of mercury, and in a large clinical experience he was definitely impressed with the value of this agent in the removal of certain types of lenticular opacity. The two Greens of San Francisco have reported a number of successful cases by the employment of this method in either the arrest of the sclerosing process or a definite absorption of some opacities. Luther Peter, of Philadelphia, has likewise been an advocate of the Smith procedure, and uses it as a routine method in selected cases. He is of the opinion that the immediate improvement in vision, which follows an injection of cyanide of mercury or any other drug which causes an equal amount of hyperemia and oedema, is probably due to a general improvement in the nutrition of the eye tissues, in which the avascular structures of the eye, the vitreous, the lens, and the cornea are conspicuously cleared. The entire uveal tract is benefited, and these structures, so directly dependent upon the circulation of the ciliary body, iris, and choroid for their vitality, are secondarily benefited. I have personally seen some of Peter's cases and have been very much impressed with the favorable results he has secured. While I have had no personal experiences in the use of cyanide, I believe, with Peter, that its beneficial action is due to the intense hyperemia and oedema it creates and not to any specific action of the drug. I have hesitated to use it, not from any fear of harmful effects, but because it is difficult to induce the class of patients we see in private practice to submit to the rather violent inflammatory reaction in the eye which it provokes.

With regard to the local use of sodium and potassium iodide, occasional reports have appeared in the literature which would seem to indicate that in some instances good results may have been obtained. Personally, I have had no experience with this treatment, and am, therefore, not in a position to express an opinion with regard to its efficiency.

Probably the most generally used drug in the local treatment of incipient cataract, during the last decade, has been dionin in varying strengths. Solutions of this drug cause

an intense hyperemia of the conjunctiva with more or less oedema and have the property of promoting absorption of inflammatory exudates to a remarkable degree. In an experience of ten years with the use of this remedy I am convinced of its value in arresting the progress of certain types of beginning cataract, and believe that it has a definite place in the treatment of lens opacities. One should not be too dogmatic in his statements regarding the action of any drug, and dionin, like any other remedy, has certain limitations. If we carefully study our cataractous lenses with the slit-lamp, I believe that we can, with a great degree of accuracy, determine in what special type of opacity we may expect to obtain results from dionin. I do not believe that this information can be obtained to the same extent by other methods of examination. It may be stated that, like cyanide of mercury injections, dionin has no appreciable effect in absorbing opaque striae or the so-called "spokes" in the lens, which are usually seen in the cortex just beneath the capsule and more often in the periphery than in the central areas, but it has a definite action in absorbing, to a remarkable extent, the diffuse lenticular haze between the striae. The appearance that one gets may be likened to a tree, stripped of its leaves, but with its branches intact. Visibility between the branches is only possible when the foliage has been removed. In like manner, visibility between the opaque striae in the lens is only accomplished when the haze between them is cleared away. The action of either dionin or cyanide of mercury is, therefore, limited to the absorption of what is clearly seen with the slit-lamp and microscope as minute punctate opacities scattered throughout the cortical areas and occasionally in the central nucleus. It is these opacities which produce in the lens the general haze which is apparent with the ophthalmoscope. To be effective, dionin must be used in solutions of certain strength and by interrupted instillations. If used continuously over long periods, it gradually fails to cause any vascular reaction in the ocular tissues and thus defeats the object for which it is employed. Unless it produces a definite reaction in the eye, it can have no appreciable effect upon opacities in the lens. My usual method is to produce a rather sharp reaction in the eye by using a comparatively strong solution for the first treatment, and, after the reaction has subsided, to continue the instillations with weaker solutions at intervals of every three or four days over periods of six months or more. The reaction never does harm, but patients should always be warned that some eyes will react more sharply than others and that the temporary oedema and redness produced will quickly subside. When such explanations are made, they rarely ever become alarmed over the rather unprepossessing appearance of the eye.

Conclusions

1. Incipient lens opacities are by no means infrequent and, if studied carefully, will frequently be found to be dependent upon and associated with other pathological conditions of the eye.

2. To regard beginning cataract as a hopeless condition and one which must be inevitably cured by operation is both unscientific and not based upon facts.

3. The correction of refraction errors with hygienic care of the eyes, and the elimination of local pathology, particularly in the uveal tract, will do much to retard the sclerosing process in the lens.

4. The elimination of the term "cataract" from medical literature because it is devoid of scientific meaning and is based upon erroneous conclusions, would be most desirable. The avoidance of the term in our consultation rooms would, likewise, do much to quiet the fears of nervous patients.

5. The use of certain agents locally, which cause a definite reaction in the ocular tissues, thereby improving nutrition of the lens and correcting underlying ocular pathology, do much to retard the sclerosing process, and in many instances definitely absorb certain types of opacity.

FRACTURE OF THE SKULL AND UNILATERAL OPTIC ATROPHY.

By V. K. HART, M. D., Statesville, N. C.
From Department of Head Specialties, Davis Hospital.

The writer at one time or another has had occasion to see a number of patients with a fracture of the skull. However, he never before has seen one with unilateral optic atrophy. Moreover, this is the only residual involvement. Therefore, the case is deemed interesting enough to report. The anatomical features are at least worthy of consideration.

Briefly the history is abstracted as follows:

H. P. I.—The patient, a male, eight years

of age, was run over by a car and brought into the hospital unconscious.

P. M. H.—Nothing of value.

F. H.—Negative.

Physical Examination: The patient, as before stated, was unconscious. There was slight prominence of the right eye and the right pupil was moderately dilated and practically fixed. There was some bleeding from the right ear due to a recently ruptured drum. Other than these findings, a careful and painstaking examination elicited no other positive findings.

Laboratory: A spinal puncture was done at once. The spinal fluid contained a small amount of blood which was probably not from extraneous sources, but in the fluid itself.

Clinical Course: The patient regained consciousness in about six hours. He began taking fluids, although at first he had several attacks of nausea and vomiting. On the following day, however, he began to steadily improve. No signs or symptoms of increasing intracranial pressure supervened. Several spinal punctures were done during the first week of his hospitalization both for therapeutic and diagnostic reasons.

A stereoscopic X-ray of the skull showed a fracture extending superiorly and horizontally through both of the lesser wings of the sphenoid. The line of fracture was more anterior on the left and closer to the optic canal on the right. The other bones of the skull showed no involvement at all. Nevertheless, the patient left the hospital in six days.

The only altermath of the accident was entirely limited to the right eye. Subjectively, there was complete loss of vision (amaurosis). Objectively, the pupil was moderately dilated and did not react to light. There was slight exophthalmos and limitation of all ocular excursions to small degree in all the principal meridans with exception of the field of the right external rectus where a well defined paresis existed. The media was clear and the eye grounds showed no pathology or unusual findings. The vision of the left eye was 20/25 and the findings entirely normal in every respect.

A week later the patient was again seen. There was then slight exophthalmos and some limitation of motion in the field of the right external rectus. No note was made then of any unusual eye ground findings. The vision was 20/20 in the left eye. Complete blindness had persisted in the right.

One month later the patient was again seen. There was a very small residual paresis of the right external rectus. A little exophthalmos persisted. The fundus, however, showed a classical atrophy of the nerve which was very pale, and the calibre of the central vessels much diminished. In the last few weeks the prominence of the eye has gradually lessened and the function of the external rectus has returned almost to normal.

Discussion: It is interesting to speculate as to the exact pathology involving only the right nerve, and necessarily, of course, anterior to the optic chiasm. In the writer's opinion such involvement most probably came from a subdural hemorrhage on the right side anteriorily, with seeping into the space between the pia and dura as they are prolonged along the nerve.

The anatomical relationships are not difficult to visualize. Investing the optic nerve as it leaves the optic chiasm are the meninges which make a sheath for the nerve. The pia fits the nerve rather tightly but the dura and underlying arachnoid only loosely, comparatively speaking. These (dura, arachnoid and pia) blend with the sclera when the nerve reaches the eyeball. The nerve, to reach the globe, passes then through the optic foramen, —formed by the two roots of the lesser wing and the body of the sphenoid.

Blood, then, extravasating into the subdural space would exert considerable pressure on the retrobulbar portion of the nerve after clot formation because, primarily, of a resisting sheath, and, secondarily, because of an unyielding optic foramen. A subdural collection of blood in this area could also easily involve the sixth nerve in similar manner as it leaves the subdural space to pass through the sphenoidal fissure with the 3rd, 4th, ophthalmic division of the 5th, and the ophthalmic veins. Why the sixth nerve was involved almost to exclusion of the third and fourth nerves (there was perhaps slight involvement of the other eye muscles immediately after the accident, but such involvement was slight and transitory) is more difficult to explain.

The sixth nerve, before reaching the sphenoidal fissure, lies between the 3rd and 4th nerves.[1] Reaching the sphenoidal fissure, it turns laterally beneath the ophthalmic division of the 5th to innervate the external rectus muscle.[2] It is, of course, closely related to the oculomotor and trochlear nerves. It is possible, however, to have a small subdural hemor-

rhage involving the abducens to the exclusion of the other nerves.

The exophthalmos in such cases, in the writer's opinion, may be explained in any one of three ways or a combination of them: 1. Trauma to the dura, inflammatory reaction, infiltration and consequent pressure on the ophthalmic veins with passive congestion. 2. Hemorrhage, clot formation, and pressure on the veins and consequent obstruction to the return flow of blood. 3. A small intra-orbital hemorrhage.

One might ask, "Why does not an intra-orbital hemorrhage account for all the symptoms?" In the first place, because blood was found in the spinal fluid, which points to intracranial patholgy. Secondly, such an extravasation of blood would hardly exert enough pressure in the optic nerve to cause a complete atrophy. Thirdly, there was X-ray evidence of fracture.

New bone formation about the optic foramen, particularly in view of the location of the fracture, is a possibility, with resultant pressure on the optic nerve. However, the loss of vision immediately after the injury in contradistinction to a gradual loss, argues against such a process.

BIBLIOGRAPHY.

1. Pierson, Geo. A.: Human Anatomy, Vol. 2, Phila. and London, Lippincott, 1919, pp. 1223-1230.
2. Spalteholz, Werner: Hand Atlas of Human Anatomy, Vol. 3, Phila. and London, Lippincott, 1923, p. 712, July 21, 1926.

THE HYPOPLASTIC TENDENCY IN GYNECOLOGY.*

By ROBERT YOUNG SULLIVAN, M. D., F. A. C. S.,
Washington, D. C.
From the Department of Gynecology, Georgetown University.

This subject is of great interest, at least in a scholastic way, to those who are actively engaged in the practice of gynecology, since it presents a series of defects which appear in several important manifestations. Some of these are curiosities, occurring as anatomical defects which are beyond improvement, others as functional defects, and others appear as developmental defects, where growth only has been arrested. In these latter instances, treatment may be rewarded with considerable improvement.

The conditions in which hypoplasia are evident may be either general or local, as recognized by the usual evidences or so-called stigmata. Considerable investigation and discussion has been carried on in the hope of determining whether general hypoplasia is a reflection of local glandular defect, or whether the local defects are not incident to the general tendency to poor development. Without doubt, the latter view is the more reasonable, the glandular upset being incident to and really contributory to a marked degree, except where total absence of an endocrine gland is the case, which is without the scope of this paper.

The etiologic factors leading toward lack of development seem to be largely systemic: hence, we have hereditary and environmental influences causing arrest of development at the time of puberty, as shown conclusively in histories of those whose ancestors show mental defect, alcoholism, syphilis, race degeneration from incest and consanguinity. Also should be noted the effect of prematurity at birth and in illness in early youth, as in instances of rickets, tuberculosis, chlorosis, the acute exanthemata occurring in childhood, especially when these illnesses occur in severe form, and particularly at the developmental period, adolescence. The damaging permanent effects of severe illness at this period of life by mumps, measles, scarlet fever and diphtheria are well known. Lately, the belief has existed that the acute respiratory infection, grippe, and tonsillitis produce telling effect by also arresting the development of the genitalia chiefly by causing thickening of the tunica albuginea of the ovary, thereby definitely limiting the function of that organ both as an organ of procreation and also as one having an internal secretion.

The hypoplastic tendency is shown principally in two types of individuals, as described by Graves[1]—"The old maid type and the masculine type." They are quite different but rather easily recognized chiefly by the stigmata of infantilism. The first type is characterized by the thin, unattractive form, with flat chest, long neck, possibly bent spine, poor muscular development, poor breast development, and small genitalia, often with congenital descent of the uterus and general enteroptosis. With these there are many instances of small hearts with thin walled blood vessels, the typical evidences, for the most part, of general hypoplasia directly due to the congenital, environmental and hygienic faults enumerated above. The masculine type, in contradistinction, presents quite a different picture, showing a well developed and nourished individual with tendency possibly to obesity, who

*Read before the Hippocrates-Galen Society, Washington, D. C., March 19, 1925.

shows no general hypoplastic fault, and yet who shows definite local stigmata of infantilism, as small, rudimentary external genitals, with infantile uterus and undeveloped ovaries. Both types have excessively sensitive nervous systems, and both show low blood pressure and basal metabolic rate. The local changes characteristic of hypoplasia may be, and usually are, present in both types, and upon the extent of these anatomical defects a great deal depends, since they really determine the end-result so far as treatment is concerned.

All anatomical developmental defects relative to the uterus and tubes relate to failure of perfect union of the ducts of Mueller. It may be said, also, that there may be absence of the internal organs of generation, but these conditions are curiosities and have no place in this discussion. The local stigmata, which are characteristic, are small labia, small vagina, and either the dwarf uterus or fetal uterus. It is true, however, that absence of the ovary produces marked lack of development, as shown by the effect of castration in adolescence. The dwarf uterus is one in which the cervix bears the same relation to the fundus as in the mature uterus of the child-bearing organs, but the entire organ is arrested in development, retaining the puerile size. The fetal uterus is, however, one in which the normal relation of the fundus to cervix is reversed, the cervix being as three to one. In both types the musculature is poor and the utricular glands are absent, making defective musculature and mucosa, hence, presenting one of the chief influences of hypoplasia, sterility, since neither of these uteri can become impregnated.

The tube of the hypoplastic individual is tortuous, and rudimentary in size and musculature. Since its mucosa is of poor cellular development a second influence is clearly shown, as it is well known that undeveloped uteri and tubes easily succumb to infection. The ovary of infantilism presents characteristic evidences. It is small, and the tunica albuginea is thick and tough, making it extremely difficult for ova to be extruded; hence, the increased tendency to sterility from ovarian cause. Section of the ovaries shows thickening of this covering which, also, no doubt, causes such internal pressure within the ovary that few follicles mature and the internal secretion of the ovary is thereby materially lessened; section of these ovaries reveals the fact that most of the follicles are atretic.

Some allied conditions not definitely stigmata of infantilism are frequently seen in gynecology. These are some of the displacements of the uterus, but chiefly the uterus in its retrocessed position, either in anteflexion or retroflexion. Without doubt, these conditions are arrests of development rather than actual defective organs. There is not the change in the endometrium or musculature; hence, there is defective function only, manifested chiefly in irregularities of menses, scanty flow, dysmenorrhea, sterility and abortion, if pregnancy occurs. The occurrence of enteroptosis and nephroptosis, also gastric descent, are part and parcel of the tendency which in the genitral tract also gives rise to relatively the few cases of congenital prolapse and cystocele.

The clinical course of those individuals suffering from either general or local hypoplasia is rather characteristic, being similar to some degree whether the major portion is constitutional or local. The evidences are usually fatigue, apathy, lack of appetite, and exhaustion, which is easily induced. Headache with indigestion and neuritis are common, much of which is due to surroundings, to posture and habits. Palpitation with fainting attacks is by no means unusual in these women. These are typically limited individuals. The more pathognomonic symptoms, however, are dysmenorrhea, amenorrhea, and sterility. Without doubt, amenorrhea is chiefly due to ovarian hypofunction in the majority of cases, but frequently there is ground to explain such occurrences in these individuals to the low state of vitality; also the anemia, which is easily produced in them, by acute or chronic infectious disease.

Sterility in the hypoplastic is the rule and is usually the result of defective uterus or ovaries or, of course, the absence of these organs. In such instances it is usually hopeless. In functional upsets a possibility of improvement is possible.

Dysmenorrhea in this type of individual is the characteristic and diagnostic symptom, and is also the most frequent appeal for treatment. Many theories as to the cause have been advanced, as obstruction of the os, angulation of the canal at the junction of the cervix and body, thickened endometrium, poor circulation and enervation incident to faulty development. In addition to these theories, the belief of ovarian dysmenorrhea as a cause is held by Olshausen[2] due to disturbed internal pressure of the ovary from thickened tunica. Kronig,[3]

admitting the possibility of mechanical causes, thinks that this type of pain is a form of psychoneurosis in this variety of patient. Fliess and Schaeffer[4] assert that many patients have dysmenorrhea because of irritation of the genital spot on the tuberculum septi, which seems to bear out the theory of nerve insufficiency. Memge[5] also describes the pain as due to physiologic menstrual contraction pain which would probably not cause distress in normal individuals. Undoubtedly, the combination of poor nervous balance, poor enervation, and disturbed circulation due to mechanical difficulty all go to cause temporary upset of the nervous system in weakened individuals, and hence give pain.

Therapy for such a problem will of necessity be attended with a large percentage of failures. Without doubt, great improvement has already been made since the advent of considerably better hygienic routine for women of the past two decades. Recognition of the condition is of the greatest importance, and constant efforts to secure proper social, hygienic and developmental betterment by physicians and sanitarians will, indirectly, bring about the greatest benefit. The constitutional or hygienic treatment certainly offers the greatest chance for good results. Treatment of syphilis, tuberculosis, alcoholism, and blood diseases should receive their appropriate places assigning the medical treatment of dysmenorrhea, sterility and the like, to a secondary position, and, also, their relief by operative measures at first. Careful supervision of the daily program of all girls during the development period will eliminate many instances of arrested development. The greatest care should be made to secure complete recovery from the acute illnesses that imperil childhood; overlong rest and care probably will avoid sequelae of this type. Of equal importance is the reduction of the educational and social problem during the period of adolescence. Probably maturing girls are over-taught, over-entertained, underfed, and improperly clothed, during this period. The effect of too great strain, pernicious habits, and fatigue, are beyond question. The phobia for thinness by starvation cannot be to greatly condemned.

This type of patient should be placed upon a definite routine by the internist, making every effort to correct anemia by proper food and internal medication. They should also derive great benefit from corrective exercise; and defective posture should be overcome by proper orthopedic advice and device.

Treatment of the particular conditions and their particular symptoms is attended with rather indifferent success. The hygienic and constitutional treatment for appropriate conditions usually is successful in improving the situation from the general standpoint. Amenorrhea in this way often gives way to regularity when the general health improves. Sterility, when due to absent or defective organs, is hopeless. If arrested function and development is the case, some few may be aided to become mature by general therapeutic measures, aided, also, to some degree, by correcting mechanical defects, by operation, and by the use of orthopedic devices, pessaries.

The relief of dysmenorrhea is, of course, the most acute demand, and everything imaginable has been offered for this problem. Supplementing the treatment for specific instances alluded to above, the relief for this condition may be brought about in one of three ways, — administration of antispasmodics, chiefly for the spastic uterus of the retrocessed type; endocrine administration to supplant lacking ovarian tissue or to stimulate dormant ovarian activity; or by surgical measures directed towards correcting a mechanical defect. Alcohol and opium should not be advised. The antispasmodics, viburnum, atropine, benzol benzoate, etc., have been fairly successful in relieving the pain although temporarily only. As to the administration of endocrines in dysmenorrhea, it is felt that the method is an entire failure, much better results being gained by the administration of iron and arsenic in the intermenstrual period and the antispasmodics to meet the periodic pain. Few, if any, instances of infantile uterus have been increased in size or function by administration of endocrines. On the other hand, administration of ovarian extract is extremely efficacious in producing increase of flow and it also aids in securing more normal function in every respect, except relief of pain.

Efforts to relieve dysmenorrhea by surgical and orthopedic means have been made repeatedly in this group of cases chiefly where the uterus is infantile, or where there exists the allied condition of retrocession with either anteflexion or retroflexion. For such conditions, dilatation and curettage is a most lamentable failure, being really a form of assault. Dilatation in a small number of cases gains a respite of a few months. Curettage of the in-

terior of the uterus, already defective, cannot help but add injury. Replacement of a retroverted uterus by a well fitting pessary is often of great value. Also, there is no denying the fact that occasionally the stem pessary, by stimulating a small but normal uterus, does bring relief from dysmenorrhea, occasionally causing further development, and finally rewarding the patient by the occurrence of pregnancy.

Following the method of Graves[6] I am gratified to report that dilatation of the cervix followed by shortening of the round ligaments has been of great benefit in the last series of twenty-five cases treated for dysmenorrhea from retrocession with either acute anteflexion or retroflexion, and that, in my hands, no other method has been attended with any success whatever. The Gilliam type of round ligament shortening was done and the relief seems to be permanent after one year.

Conclusions

1. The hypoplastic tendency is a great handicap in national, racial, social and personal life. The efficiency and well-being of individuals so affected is considerably reduced, thereby curtailing both earning power and other forms of endeavor, to say nothing of the disadvantage of poor health from the stand point of pain, annoyance, fatigue, and disappointment in the manifest purposes in life.

2. This condition may be limited and offset by the correlated efforts of physicians, orthopedists, and gynecologists, to reduce hereditary taint, to limit the number and extent of intercurrent diseases during the formative period of life of women, and by the treatment by appropriate medical or surgical means of the particular cases where the defects are already present.

3. Dilatation of the cervix uteri with shortening of the round ligaments seems to offer the greatest relief in cases of retrocession uteri, which seems to be the chief cause of the pathognomonic symptom, dysmenorrhea.

1. Graves "Gynecology." Pag 585.
2. Graves "Gynecology." Page 550.
3. Graves "Gynecology." Page 550.
4. Crossen "Gynecology." Page 1001.
5. Crossen "Gynecology." Page 1001.
6. Graves "Gynecology." Page 516.

THE SURGICAL ASPECT IN GYNECOLOGY.*

By GILBERT FRANKLIN DOUGLAS, M. D., Birmingham, Ala.

In considering this subject, we shall have to keep the fact before us that there is a medical as well as surgical side in the practice of gynecology, and that this fact is true in practice as well as in theory.

Purposely, only a few of the more salient points will be touched on of the several conditions dealt with in this paper.

First, for consideration, let us study the perineum. This as a rule requires very little thought until after childbirth, when, if a marked laceration or tear occurs, or if there is a separation of the fibers of the perineal muscles even though they are not torn, we have the relaxed outlet which would cause the patient to suffer the same degree of discomfort that she would if there was a laceration of the muscle fibers themselves. For this reason, we should never content ourselves that there is no pathology of the perineum when evidences of laceration of the mucous membrane are not seen superficially, when the patient complains of the uterus or bladder extruding from the vaginal outlet. When there is a persistent heaviness or dragging sensation in the vaginal region without other pathology, we should examine before discharging our patient and telling her there is no trouble.

Now, what is the best treatment to be instituted? I feel there is only one logical treatment, and that is perineorrhaphy. The technic used in this operation makes very little difference provided it is based on fundamental principles, which are to approximate the levator muscles, making sure also that both the deep and superficial fascias are brought together with suture material that will hold long enough for the muscles and fascias to become firmly united. My personal preference is to use either forty day chromic catgut or "figure 8" sutures of non-absorbable suture material, so I can feel assured that they will hold long enough for union to take place. When these basic principles are used, with proper care to prevent infections from the rectum, also seeing that proper hemostasis has been effected, we can usually expect desired results.

Now, just a word relative to immediate perineorrhaphy following delivery. I feel this should always be done when at all practicable, and, unless the physician delivering the

*Read before the Chattahoochee Valley Medical and Surgical Association, at Warm Springs, Ga., July 13, 1926.

woman is prepared to do this or will call some one to help him at times when needed, I believe that he is justified in refusing to do obstetrics. Of course, I realize there are emergencies when this cannot be done, but my plea is that generally this should be provided for. Probably it is irrelative in this paper, but let me suggest that we never deliver a woman without examining the perineum after delivery is completed to see if there is a laceration. Doing so routinely and carefully, there will be fewer exclamatory remarks, "I seldom have a laceration of the perineum during delivery!"

A second degree laceration of the perineum properly repaired will relieve many of the pains and hours of discomfort of the patient.

Next in order of study, what method of surgical treatment shall be instituted in lacerations or diseased conditions of the cervix? (This paper only deals with the surgical aspect; consequently, I will not discuss the medical treatments used, as there are many). Where we have laceration with chronic infection following, which does not respond to medical treatment, we should unhesitatingly recommend trachelorrhaphy to remove the focus of infection, and also to rid the tissues of the chronic irritations which no doubt are conducive to the development of carcinoma of the cervix. To allow this focus to remain is only leaving a point of infection which creates toxins that cause sytemic symptoms the same as are caused by foci in other parts of the body. So, if we wish to clear the water in the stream, "First, we have to get the old sow out of the spring."

My preference of the technic to be used in trachelorrhaphy is that of Sturndorf, of New York, which in principle is to remove the infected cervical glands without destroying any more of the musculature of the cervix than is practicable. By doing this, the woman, with future pregnancies, can, as a rule, conceive and carry her baby to term without aborting, for the muscle tissue of the cervix has been left intact in sufficient quantity not to weaken the cervix unduly. In doing this operation a circular incision is made around the cervix near the external os, carrying only through the mucous membrane and endeavoring to get rid of all the diseased mucous membrane and scar tissue. This tissue is dissected up like a sleeve to a point opposite the internal os. The cervical glands are removed by cutting a cone-shaped mass, including the cervical canal, with apex of cone upward so as to reach as high as the internal os. The cuff of mucous membrane is then sewed, catching a bite in the mucous membrane both anteriorly and posteriorly. Taking the anterior lip first, the needle is passed within the new cervical canal, allowing it to gain exit through cervical tissue to a point considerably above the point of original entrance in mucous membrane. The needle is threaded on the other end of the suture and carried through the same maneuver as before. This is tied, bringing the tip of mucous membrane high up into the cervical canal, approximating the raw tissues so that healing may take place readily, at the same time lining the cervical canal with healthy mucous membrane. I use either forty day chromic cat-gut or non-absorbable suture material, so as to maintain coaptation until healing has taken place. Excellent results are obtained both functionally and cosmetically.

To temporize with an ulcerated or inflamed cervix indefinitely without surgical interference is, as it were, courting disaster—a small bit of fire smouldering along to develop to a greater point of ignition, manifesting itself in the form of a rapidly developing cancer of the cervix. Cervical pathology is always to be looked upon with due consideration as there is great danger of malignancy.

Having discussed briefly the perineum and cervix, let us consider some of the intra-abdominal or pelvic conditions. In studying diseases of the tubes, my convictions are that, relatively speaking, all acute tubal conditions are entitled to being treated as medical gynecology. This may prove to be only a palliative measure, but, if so, we can then operate. On the other hand, many of these conditions are cured and the patient can go through life happy, with the ability to conceive and have children, which certainly adds to the psychic poise of most every healthy woman.

When a trial has been given the medical treatment and the condition has not been cured, I feel that the patient is entitled to surgical treatment, removing the tubes, for, if she is working and dependent upon her physical endurance to make her financial support, she is certainly more capable if going about her duties comfortably than she is if suffering. In this connection, let me insist that we do not remove tubes promiscuously when we have operated on account of a mistaken diagnosis, basing this on the idea that it is imperative to do something to satisfy our conscience. If

there be no pathology, let us gracefully get out without doing further destruction.

In many cases where there is pathology of the tubes, we also find trouble with the ovaries, due to infection which has gained entrance by contiguity, continuity of tissues, or from the blood stream. Of course, when there has been irreparable damage done to the ovary or ovaries, the only sensible thing to do is to remove what is necessary, but there are many cases where the ovaries are literally covered over by pus tubes, when if the tubes are removed without too great a disturbance to the blood supply of the ovaries, they will clear up and soon appear normal again. We are not warranted in removing all ovaries which happen to be in close proximity to diseased tubes, and certainly we are not justified in unsexing any woman where pathology or other valid reasons do not so indicate. On the other hand, we have the same obligation to remove diseased tissues and not allow them to remain intact so they will cause a subsequent operation within a short time, unless by special request of the patient that such so-called conservatism be practiced.

In all operations where the blood supply of the tissues involved comes from a common supply in an immediate location, we should be careful not to destroy any more of the supply than possible, for to do so will often cause cystic ovaries or other pathology which could otherwise be avoided.

In operating for uterine troubles there are many things to consider. As a broad principle, wherever there is a question of malignancy, we should do a hysterectomy, if such is indicated, rather than use palliative treatment.

Briefly, in dealing with uterine myomata, all things being equal, the sooner the tumor is extirpated, should it be growing in size or giving symptoms by pressure, causing bleeding or other constitutional symptoms, the better it is for the patient, for doubtless many of the tumors diagnosed as benign are of malignant origin, or ultimately prove malignant and cause death, whereas, if they were operated upon early, the patient would be relieved of the uncomfortable symptoms, and an early death due to procrastination might be prevented.

In operating for uterine myomata, we are put to the test on many occasions to know just what type of operation should be done, especially when dealing with fibroids of the fundus. These growths are often seen in comparatively young women who only have one or two children and want more. If possible to do a myomectomy in these cases without having to jeopardize the musculature of the fundus, it is best to do so where the patient understands the possibility of the development of another fibroid and a subsequent operation, but still desires the palliative operation. Those of us who have attended Professor Tuffie's Clinic in Paris will remember seeing him remove from one to a half dozen fibroids from the same uterus with subsequent pregnancies.

If we are doing a hysterectomy where malignancy of the cervix is not suspected, what shall be our plan? Do supravaginal hysterectomy, total hysterectomy, or pan-hysterectomy —that is, removing uterus *in toto*, tubes and ovaries.

First, we will discuss the supravaginal hysterectomy. If we are operating for a fibroid of the fundus without involvement of the cervix, and if there is no infection of the cervix or suspicion of cancer, I think by all means the simple operation is the one of choice, for certainly there is much less mortality in the hands of the average operator in doing supravaginal hysterectomies than in doing total hysterectomy. However, where there is a definite infection of the cervical glands or suspicion of malignancy, the more radical operation, total hysterectomy, should be done. If the total hysterectomy is not done where the cervical glands are involved, we should first do a trachelorrhaphy to remove the foci of infection, for, as above stated, if the foci are left, we shall only expect systemic symptoms to follow.

Where the cervix is involved, either by chronic infection or if there be suspicion of malignancy, wisdom will tell us to do a total hysterectomy, but still my belief is, if the tubes and ovaries are healthy, it is best to leave them, especially the ovaries, for I think that the constitutional symptoms caused by an abrupt surgical menopause are more detrimental than are the chances for having a subsequent operation for cystic or diseased ovaries. The few months or years that the ovaries give off their hormones or internal secretory products certainly make the menopause much easier after hysterectomy.

Just a word about the technic of total hysterectomy. In married women it is certainly much more comfortable in after life if, in closing the peritoneum about the upper margin of the vagina, the method used in lengthening the vaginal vault be used. This can be

done by sewing the edge of the peritoneum where it is reflected over the bladder to the upper margain of the vagina in front, and the reflected portion of peritoneum posteriorly to the cut upper margin of the vagina; then, when we go to close the folds of the broad ligament in approaching the edges of the vagina, the peritoneum both anteriorly and posteriorly can be approximated by sutures high enough so the vagina can be considerably lengthened without causing any inconvenience, and still all of the raw surfaces are covered over with peritoneum. (This is the method of Faure, of Broca Hospital, in Paris).

Now, thirdly, when shall we consider panhysterectomy or the complete removal of the uterus, tubes and ovaries? I think this can be answered briefly by saying that this should be done when there is malignancy of the fundus or beginning malignancy of the cervix, and where we have a chronic inflammation of the tubes and ovaries to the extent that we would not expect it to clear up if left intact. To leave a focus of infection is to leave trouble which will become manifest either locally or constitutionally within a short time. I believe in conservatism when we can hope to see our patient well, but if this cannot be hoped for without radical surgery, let us accept the inevitable —radical surgery.

The female breasts are to be properly examined and, if diseased, treated in a sane manner, for it is certainly much better to sacrifice a breast by removing it than it is to treat by palliative methods until metastases have taken place into the lungs or other remote organs or tissues of the body when a cure may be impossible.

Now, in addition to the foregoing generally accepted gynecological operations, we have constantly a phase to deal with which has not heretofore been mentioned, that of the bladder, ureters and kidneys, also the rectum, sigmoid, colon, etc. These latter organs are overlooked so frequently, especially from the diagnostic viewpoint, until I feel it timely to say if we ever expect to do the best gynecological as well as abdominal surgery, these organs will have to be considered and properly diagnosed. I believe that every gynecologist should be able to do good cystoscopic and sigmoidoscopic work, or else he should have some one associated with him constantly who can do this work for him: otherwise, many needless operations will be done and the pathological conditions, stone in the kidney, ureter and bladder, cancer of these organs, and also cancer of the sigmoid, rectum, etc., will be overlooked—due to not properly examining the patient by these last named methods.

Now, in conclusion, let me say that no surgeon should start out primarily to do gynecological surgery until he has first had the fundamental training in general surgery, for often it is much easier to remove a gall-bladder, or a kidney, do a gastro-enterostomy or many of the other major operations in the upper abdomen, than it is to do a hysterectomy, repair a vesico-vaginal fistula, or repair a third degree laceration of the perineum successfully. When we have opened the abdomen, we should know how to take care of any surgical condition that may arise, as we will certainly have to meet these conditions even though we do gynecological surgery primarily. Owing to the more rapid absorptive powers of the diaphragm and other tissues in the upper abdomen, naturally the patient can stand more toxins in the lower abdomen and pelvis than in the upper, but this fact does not warrant undue abuse of the tissues of the lower abdomen and pelvis.

In our last consideration, let us not forget that a patient can be compared very much to a piece of machinery in that they can stand a certain amount of trauma and shock without much reaction, but when we go beyond the reasonable point our patient suffers. To do a hysterectomy and then go into the upper abdomen and remove a gall-bladder, do a gastro-enterostomy, etc., is, as a rule, bad surgery, and we can only expect disaster to follow. It is certainly much better for our patient to be subjected to more than one operation and recover than to attempt too much at one time and die from shock.

Conclusions

1. Lacerations of the perineum should be repaired immediately, if possible; if not, then secondarily when giving symptoms.

2. Trachelorrhaphy should be done to remove foci of infection and get rid of irritation, so as to prevent subsequent cancer formation.

3. Determining the type of hysterectomy to be done depends on the question of malignancy, infections of cervix, type of myomata, etc.

4. My belief is that all ovaries should not be removed because hysterectomy is done, if there are no indications of malignancy present. To leave ovaries intact relieves many of the

uncomfortable symptoms of an abrupt surgical menopause.

5. Myomectomy may be practiced in cases of fibroids of the fundus, to give opportunity for subsequent pregnancies.

6. Female breasts should always be examined in doing routine gynecological examination and, if malignant, sacrifice them before metastases take place.

7. In gynecological surgery, we should always keep in mind the pathology of the kidney, ureter, bladder, rectum, sigmoid, and colon, and be able either to do or to have done cystoscopic or sigmoidoscopic examinations when at all indicated.

8. Before presuming to do gynecological surgery as a specialty, we should first have the fundamental surgical training in abdominal and general surgery.

804-6 *Empire Building.*

Clinical Reports

A CASE OF CANCER OF THE STOMACH IN A MAN 73 YEARS OF AGE, WITH PARTIAL GASTRECTOMY UNDER LOCAL ANESTHESIA.*

By J. SHELTON HORSLEY, M. D., Richmond, Va.
From the Surgical Department of St. Elizabeth's Hospital.

Since the last session of the Medical Society of Virginia, in October, 1925, I have done partial gastrectomy in two cases of cancer of the stomach, both patients past seventy years of age. During this period I have done partial gastrectomy for non-malignant ulcer in six other cases, making a total of eight partial gastrectomies. All of the patients recovered from the operation.

The two cancer cases made a very satisfactory immediate operative recovery. The pulse in neither one reached 100 during the operation. One of these cases, Mr. C. L. W., aged seventy-one years, operated upon December 29, 1925, was reported in the VIRGINIA MEDICAL MONTHLY for May, 1926. He is now in good health, and there is no sign of recurrence.

The other patient, Mr. B. C. M., seventy-three years of age, a farmer, complained of "stomach trouble". There was a somewhat movable tumor in the epigastric region. Roentgenologic examination showed an extensive filling defect in the pyloric portion of the stomach—apparently advanced carcinoma. He entered St. Elizabeth's Hospital on May 24, 1926, and was operated upon under local anesthesia on May 28, 1926. The pyloric portion of the stomach contained an infiltrating mass. Along the lesser curvature the invasion was rather more extensive than elsewhere, but a clamp could be applied securely just above the apparent upper limit of the disease in the lymph nodes of the lesser curvature. Section of the duodenum and about the middle of the body of the stomach was made with the electric cautery, and the pyloric half of the stomach was removed. (Figures 1 and 2). The stump of the stomach was joined to the stump of the duodenum by a modified Billroth I

Fig. 1.—Mr. B. C. M. Drawing showing interior of stomach. On the left is the margin of the duodenum. In the pyloric portion of the stomach adjacent to the duodenum is a large ulcer with elevated margins. The lymph nodes along the lesser curvature showed metastases.

operation. The modification that I have adopted consists chiefly in uniting the lesser curvature of the stomach to the upper border of the duodenum and in splitting the anterior surface of the duodenum to flare it open and so enable a satisfactory union to be made between the thick wall of the stomach and the thin wall of the duodenum. This operation can be used in a large percentage of cases. When too much of the stomach is involved or

*Case Report read before the fifty-seventh annual meeting of the Medical Society of Virginia, at Norfolk, October 14, 1926.

when the duodenum itself is diseased, a modification of the Billroth II operation, preferably the Hofmeister modification, or probably the Polya operation, may be done. This modified Billroth I appears much superior, however, to the other types of gastrectomies, as it unites the stomach to the duodenum, which is the natural receiving chamber for the stomach contents.

The patient left the table with a good pulse of 70. While his immediate operative recovery was satisfactory, a slight pneumonitis developed two or three days after the operation, his pulse rate reaching 120 and temperature 102.4. At the same time he had hiccoughs which persisted intermittently for about eight days. After recovering from these two affections, however, he improved rapidly and is now in excellent condition four and a half months after the operation.

An interesting feature about both of these cases is the excellent manner in which they stood the immediate operation. This was largely due, I think, to the fact that local anesthesia was used. Patients of this age usually withstand any general anesthetic poorly. A drug sufficiently powerful to render them unconscious makes heavy inroads on their resistance if it has to be given long enough to do a partial gastrectomy satisfactorily. In patients whose resistance is better the administration of a general anesthestic, particularly ethylene, may be advisable, but with the very old every possible precaution of safety must be taken.

Another interesting feature of this case is that the patient gave a history of indigestion for fifty years, and this indigestion, while not of the typical hunger-pain type, was relieved by an ulcer diet. Epigastric pain with anorexia and nausea had existed for about seven months. This later pain had no definite relationship to meals, and there was no relief by food or alkali. The nausea was slightly increased after taking food. The patient during this period had lost twelve or thirteen pounds in weight. In view of the fact that nothing else was found within the abdomen to cause the "indigestion," there may have been a peptic ulcer during at least a portion of the fifty years with later cancerous degeneration.

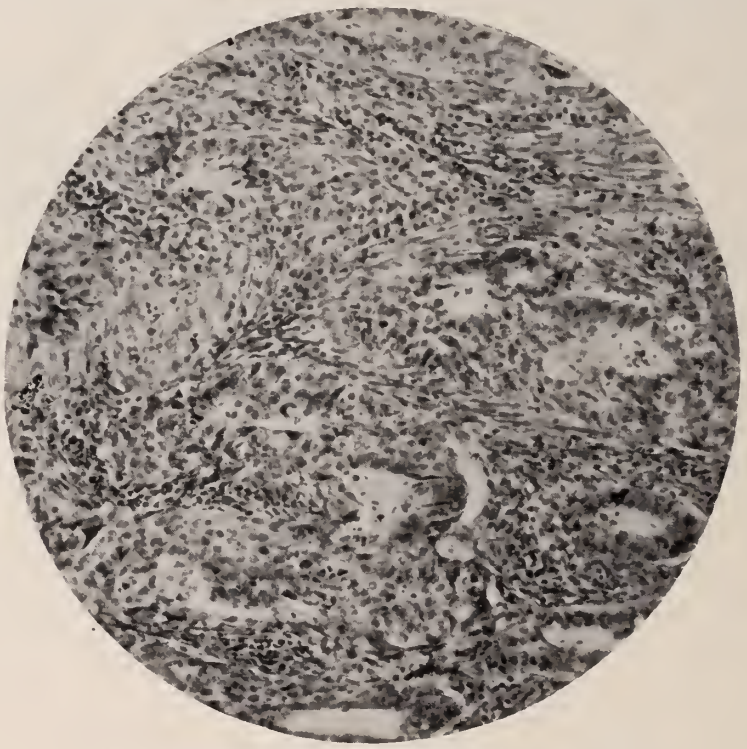


Fig. 2.—Photomicrograph of cancer of stomach shown in the preceding drawing. It is adenocarcinoma type, though the cells are not well differentiated. Some show distinct acini. In others there are merely groups of cells. It may be graded, according to the classification of Broders, as about 2½. (X 150).

The rather active discussion about the relative merits of medical and surgical treatment of peptic ulcer seems to be sometimes illogical. Medical treatment is necessary in the treatmen of peptic ulcers whether operation is done or not, and particularly after operation. It would appear almost as absurd to discuss the relative merits of setting a fracture and of wearing a splint as to debate upon the relative advantages of the surgical and the medical treatment of peptic ulcers. If a fracture is in good position no setting is necessary; if it is not in good position the broken bones must be properly aligned; but under either condition a splint must be applied. If a peptic ulcer can be cured by medical treatment intelligently given over a period of a few weeks or a few months, obviously this should be done, but when a patient has had such treatment and has not improved, and particularly if the X-ray shows a rather extensive ulcer in the stomach, there is no good reason for failing to resort to surgery. Delay in operating may be more justifiable in peptic ulcer of the duodenum than of the stomach, though this sometimes results in hemorrhage or perforation, and while cancer very rarely arises in the duodenum it does occur. There is not the same justification, however, in postponing operation for gastric ulcer. Every competent observer who is interested in pathology acknowledges the etiologic relation between gastric peptic ulcer and gastric cancer. At the Mayo Clinic it was put at one time as high as 70 per cent. The low estimate by others is 5 to 10 per cent.

In view of these things it appears that a proper policy to follow would be to give a reasonable chance for the cure of a gastric peptic ulcer by medical treatment unless there is a suspicion of malignancy, when operation should be done as soon as possible. If the ulcer does not heal readily as demonstrated not only by the disappearance of symptoms but by the extent of the ulcer when examined by a competent radiologist, a partial gastrectomy should be done. Surely no one knows of any case of gastric cancer that has been cured by other means than by excision. If, then, we delay an operation in a gastric ulcer that is not healing, we assume a very grave responsibility for the future of the patient.

Another point, too, is that many patients with gastric cancer are abandoned as hopeless who might be saved. Both of these old men were at first considered as probably inoperable from a radical standpoint, but by eliminating every possible operative danger, by using local anesthesia, and by uniting the stump of the stomach to the duodenum, recovery in each instance was satisfactory.

HILUS PNEUMONIA.*

By M. J. PAYNE, M. D., Staunton, Va.

A young lad in a military school gave the clinical picture of pneumonia. The physical findings were such that we could not definitely make a diagnosis of anything wrong in the chest. The X-ray showed a hilus pneumonia.

It teaches this lesson, that sometimes an X-ray of the chest, in acute conditions may disclose the true condition when otherwise it is not possible to make a correct diagnosis.

*Reported at the meeting of the Medical Association of the Valley of Virginia, at Staunton, May 27, 1926.

Health Organization of the League of Nations.

The first annual report of the Health Organization of the League of Nations appeared in July, 1926. This body is authorized to "take steps in matters of international concern for the prevention and control of disease." It consists of an advisory council correlated with the International Health Office in Paris, a permanent health committee of twenty members, and a health section which forms an integral part of the secretariat of the League. The health committee is the active body and is responsible for the technical direction of the health section.

The first task of the health organization was to collect and tabulate the official records of epidemic diseases from all countries where they are kept, and it expended much labor in securing uniformity and promptitude. Four commissions are engaged on such subjects as certification of causes of death, age and sex grouping, definition of stillbirth, and international standards for comparison of mortality rates. Bilateral sanitary conventions between adjoining countries also were established. Eleven special inquiry commissions studied the subjects of public-health training, malaria, cancer, tuberculosis, anthrax, smallpox, sleeping sickness, opium, sera, and biological products. Eight interchanges of public-health personnel were brought about during the year.

Proceedings of Societies

MINUTES OF THE FIFTY-SEVENTH ANNUAL MEETING OF THE MEDICAL SOCIETY OF VIRGINIA.

Norfolk, October 12-15, 1926.

GENERAL SESSIONS.

TUESDAY, OCTOBER 12, 1926

The Fifty-Seventh Annual Meeting of the Medical Society of Virginia convened in the ballroom of the Monticello Hotel, Norfolk, at 8 P. M., and was called to order by Dr. Israel Brown, Chairman of the Committee on Arrangements.

The invocation was said by Rabbi L. D. Mendoza.

The Society was welcomed in addresses by Dr. J. Warren White, on behalf of the Norfolk County Medical Society, and Hon. S. Heth Tyler, Mayor, on behalf of the city.

After announcements of coming meetings and of entertainments, the President, Dr. W. L. Harris, of Norfolk, read his address, entitled "A Country Surgeon," and showed several pictures of Dr. J. P. Mettauer—the subject of his sketch.

The memorial hour was next observed, and the names of thirty-six members of the Society who had died within the past year were read.

Dr. Walter A. Wells, Washington, D. C. (*invited guest*), read a paper entitled "A Review of the Case of the Last Illness and Death of Washington (illustrated by lantern slides), and Dr. Olin West, Secretary and General Manager of the American Medical Association, Chicago, Ill. (*invited guest*), then addressed the Society.

A paper entitled "Shall They Pass?" was read by Dr. J. Allison Hodges, Richmond.

Dr. H. U. Stephenson, Richmond, read a paper on "The Practice of Medicine: How It Should Be Regulated by Law." On motion, it was decided that these two papers should be discussed in the House of Delegates the following morning.

The Society then adjourned to meet Wednesday morning at ten o'clock.

WEDNESDAY, OCTOBER 13, 1926.

The Society met at 9 A. M. in the ballroom of the Monticello Hotel and was called to order by the President, Dr. Harris.

Upon call for reports of clinical cases, Dr. J. Shelton Horsley, Richmond, told of "A Case of Cancer of the Stomach in a Man Seventy-three Years of Age, With Partial Gastrectomy Under Local Anesthesia." This was illustrated by lantern slides.

The following five papers, comprising a symposium on the liver, were then presented:

"Physiology of the Liver," by Dr. Frank C. Mann, Rochester, Minn. (*invited guest*).

"Liver Function from the Standpoint of Diagnosis," by Dr. Walter B. Martin, Norfolk.

"Roentgen Ray Studies of Diseases of the Gall Tract," by Dr. Fred M. Hodges, Richmond.

"Medical Treatment of Liver and Gall Tract Diseases," by Dr. J. C. Flippin, University.

"Surgical Treatment of Liver and Gall Tract Diseases," by Dr. Hugh H. Trout, Roanoke.

These papers were discussed by Drs. Charles C. Haskell, Richmond; J. Shelton Horsley, Richmond; Wright Clarkson, Petersburg, and by Dr. Mann, in closing.

Dr. Charles C. Haskell, Richmond, read a paper entitled "A Review of Various Methods Proposed for the Treatment of Mercuric Chlorid Poisoning," which was discussed by Dr. J. Morrison Hutcheson, Richmond.

A paper on "Heart Sounds and Their Interpretation" was read by Dr. Garnett Nelson, Richmond, and was discussed by Drs. Manfred Call, Richmond; J. C. Flippin, University, and by Dr. Nelson, in closing.

Mr. Wortley F. Rudd, Ph. G., Medical College of Virginia, Richmond, read a paper entitled "The Physician and the Pharmacist."

The Society adjourned to meet at 3 P. M.

AFTERNOON SESSION, OCTOBER 13.

The Society met in the ballroom of the Monticello Hotel at 3 P. M. and was called to order by the President.

Dr. Robert C. Bryan, Richmond, read a paper entitled "Further Remarks on Prostatectomy: Observation, Preparation, Technic, and Complications," which was discussed by Drs. R. L. Payne, Norfolk; A. I. Dodson, Richmond, and _____.

Dr. John H. Neff, of the Department of Urology and Proctology, Medical School of the University of Virginia, read a paper entitled "Kidney Tumors: Report of Cases."

A paper on "Purpura of the Urinary Tract" was read by Dr. Joseph F. Geisinger, Richmond. (Lantern slides).

The privileges of the floor were extended to Dr. A. J. Crowell, of Charlotte, N. C.

Dr. A. I. Dodson, Richmond, read a paper on "The Management of Ureteral Calculi" (lantern slides), which was discussed by Drs. Herbert C. Jones, Petersburg, and A. J. Crowell, Charlotte, N. C.

A telegram from the Southern Medical Association was read, conveying greetings and wishes for a successful meeting.

Dr. Dudley C. Smith, of the Department of Syphilology and Dermatology, Medical School of the University of Virginia, read a paper entitled "The Prevention of Syphilis," which was discussed by Major H. L. Freeland, M. C., U. S. A., Richmond; Drs. Roy K. Flannagan, State Board of Health, Richmond; W. B. McIlwaine, Petersburg; St. George T. Grinnan, Richmond; _____; and by Dr. Smith, in closing.

Dr. T. Latane Driscoll, Associate in Syphilology, Medical College of Virginia, Richmond, read a paper on "Correlation of Lesions of the Genitalia," which was discussed by Drs. Lawrence T. Price, Richmond; W. A. Brumfield, Blacksburg; _____; Major H. L. Freeland, M. C., U. S. A., Richmond; Dr. Dudley C. Smith, University, and in closing by Dr. Driscoll.

Dr. A. J. Crowell, Charlotte, N. C., President of the Tri-State Medical Association of the Carolinas and Virginia, in a brief address explained the purposes of the Tri-State Association.

The Society then adjourned to meet at 8 P. M.

EVENING SESSION, OCTOBER 13.

The Society met at 8 P. M. in the ballroom of the Monticello Hotel and was called to order by the President.

A paper on "The Reticulo-endothelial System, with Special Reference to the Lymphocyte," was read by Dr. H. E. Jordan, of the Medical Department of the University of Virginia, and was discussed by Drs. J. Shelton Horsley, Richmond, and Harry T. Marshall, University.

Dr. Harry T. Marshall, University, read a paper entitled "The Ancestry of Disease."

Dr. M. O. Burke, Richmond, read a paper on "Diseases of Middle Life: Can We Prevent Them?"

A paper entitled "Coronary Occlusion: Clinical Observations," was read by Dr. T. Duckett Jones, University, and was discussed by Dr. T. Dewey Davis, Richmond.

Dr. E. Clarence Rice, Washington, D. C., read a paper entitled "The Blood in Scarlet Fever," prepared by Drs. Janvier W. Lindsay, E. Clarence Rice and Maurice A. Selinger (Laboratories and Scarlet Fever Service of the Garfield Memorial Hospital,

Washington, D. C.) This was discussed by Dr. Warren T. Vaughan, Richmond.

The Society then adjourned to meet on Thursday at 9 A. M.

THURSDAY, OCTOBER 14, 1926.

The Society convened in the ballroom of the Monticello Hotel at 9 A. M. and was called to order by the President.

The following four papers, on the subject of goitre, were read:

"Reminiscence of Etiology and Original Medicinal Treatment of Goitre," by Dr. A. W. Graves, Harrisonburg.

"Thyroid Deficiency," by Dr. James H. Smith, Richmond.

"Further Experiences with Iodin in Goitre," by Dr. I. A. Bigger, of the Department of Surgery, University of Virginia Hospital, University.

"The Diagnosis and Treatment of Exophthalmic Goitre," by Dr. W. C. Caudill, Pearisburg.

The courtesies of the floor were extended to Dr. S. O. Black, of Spartanburg, S. C.

These papers were discussed by Drs. Wm. H. Higgins, Richmond; Carrington Williams, Richmond; Warren T. Vaughan, Richmond; S. O. Black, Spartanburg, S. C., and Vincent W. Archer, University.

Dr. Roger H. Dennett, of the Pediatric Department, New York Post-graduate Medical School and Hospital, New York City (*invited guest*), read a paper entitled "Acute Upper Respiratory Infections of Childhood." This was discussed by Drs. St. George T. Grinnan, Richmond; H. S. Hedges, Charlottesville; W. B. McIlwaine, Petersburg; H. M. Snead, South Hill; C. S. Dodd, Petersburg; J. H. Hiden, Pungoteague; W. P. McDowell, Norfolk, and in closing, by Dr. Dennett.

A paper on "The Treatment of Whooping Cough by Jennerian Vaccine" was read by Dr. St. George T. Grinnan, Richmond, and was discussed by Drs. W. B. McIlwaine, Petersburg; Roy K. Flannagan, State Board of Health, Richmond; Roger H. Dennett, New York City, and by Dr. Grinnan, in closing.

Dr. G. Bentley Byrd, Norfolk, read a paper on "Lessening the Pains of Childbirth," which was discussed by Drs. C. J. Andrews, Norfolk, and----------.

Dr. J. Shelton Horsley, Richmond, presented a paper on "Tumors of the Breast, with Special Reference to Their Diagnosis and Treatment," illustrated by lantern slides.

The Society then adjourned to meet at 5 P. M.

AFTERNOON SESSION, OCTOBER 14.

The Society met in the ballroom of the Monticello Hotel at 5 P. M. and was called to order by the President.

The report of the House of Delegates was presented by the Secretary of the Society and was adopted as read.

Following the adoption of this report, Dr. E. L. Kendig moved that the Constitution and By-Laws, just adopted, be put into effect "in toto" at the end of the 1927 annual session, but that the part of the said Constitution and By-Laws providing for the election of a House of Delegates be put into effect in time for the election of a House of Delegates for the 1927 annual session, and that all officers, delegates to the American Medical Association, and committeemen be selected at the 1927 annual session under the provisions of said Constitution and By-Laws. Adopted.

Dr. W. Lowndes Peple, McGuire Clinic, Richmond, read a paper on "Cancer of the Cervix: Its Past, Its Present, and Its Future." This was discussed by Dr. Joseph T. Buxton, Newport News.

A paper entitled "Gynecology for the General Practitioner," was read by Dr. Southgate Leigh, Norfolk, and was discussed by Dr. J. Kennedy Cross, Newport News, and by Dr. Leigh, in closing.

Dr. Ennion G. Williams, State Health Commissioner, Richmond, read a paper entitled "The State Board of Health and the Clinical Care of the Sick."

The privileges of the floor were extended to Col. C. R. Keiley, of the State Health Department, Richmond, and Dr. Williams' paper was discussed by him and by Dr. J. W. Preston, Roanoke.

The Society adjourned to meet at 8 P. M.

EVENING SESSION, OCTOBER 14.

The Society met at 8 P. M. in the ballroom of the Monticello Hotel, and was called to order by the President.

Dr. Charles Phillips, Professor of Pathology, Medical College of Virginia, Richmond, read a paper entitled "The Present Laboratory Technician Situation in the State."

The paper of Drs. H. B. Mulholland and J. C. Flippin, of the Department of Internal Medicine, Medical School of the University of Virginia, on "Spontaneous Pneumothorax, with Report of Cases," was read by Dr. Mulholland.

Dr. C. C. Coleman, of the Department of Neurosurgery, Medical College of Virginia, Richmond, presented a paper entitled "The Diagnosis and Treatment of Intracranial Hemorrhage Following Trauma," illustrated by lantern slides.

Dr. J. Coleman Motley, Abingdon, read a paper entitled "A Report of Two Cases of Perforation of Duodenal Ulcer in the Hospital," which was discussed by Drs. A. Murat Willis, Richmond; W. A. Brumfield, Blacksburg; Warren T. Vaughan, Richmond, and by Dr. Motley, in closing.

Dr. Carrington Williams, McGuire Clinic, Richmond, read a paper on "Aseptic Intestinal Resection: Report of Cases." This was discussed by Dr. J. Shelton Horsley, Richmond, who showed some lantern slides illustrating the several steps of the operation.

A paper on "The Treatment of General Peritonitis and Allied Conditions" was read by Dr. Julian L. Rawls, Norfolk.

Dr. Vincent W. Archer, Department of Roentgenology, University of Virginia Hospital, University, read a paper entitled "The Roentgen Ray Treatment of Subacute Infections."

The Society adjourned to meet on Friday at 9 A. M.

FRIDAY, OCTOBER 15, 1926.

The Society met in the ballroom of the Monticello Hotel at 9:30 A. M. and was called to order by the President.

Dr. S. B. Whitlock, Norfolk, read a paper entitled "Skull Pathology Revealed by the Roentgen Ray," illustrated by lantern slides. This paper was discussed by Drs. L. F. Magruder, Norfolk; and ----------.

A paper on "Harelip and Cleft Palate," illustrated by lantern slides, was read by Dr. J. S. Horsley, Jr., of Richmond, and was discussed by Dr. W. L. Harris, Norfolk, President.

Dr. J. Shelton Horsley offered a resolution extending the thanks of the Society to the Monticello Hotel, the Norfolk County Medical Society, and the people (especially the ladies) of Norfolk, for their hospitality and entertainment. This resolution was adopted.

Major Guy Qualls, M. C., U. S. A., was elected to associate membership in the Society.

Dr. Harris, President, asked Dr. Israel Brown and Dr. C. R. Grandy to escort the new president, Dr. J. Shelton Horsley, to the chair, and extended his congratulations and sympathy to the new president.

Dr. Horsley spoke as follows:

"It is needless for me to say how much I appreciate this honor. Being president of the State Society is an honor, of course, that anyone would envy, particularly coming to me, as it does, from my good friends. I certainly appreciate it. It reminds me of one of the letters that William Byrd wrote to a Mr. Simmons. Simmons was a Fellow of the Royal Society and so was Byrd. (This was the second Byrd, the founder of Richmond. Just how he horned in on the F. R. S. I do not know, but he did.) Byrd was very much impressed with the virtues of ginseng. Simmons, who was a much more scientific fellow than Byrd, did not think much of it; but Byrd kept pestering him with it. Finally Simmons was taken sick, and Byrd sent him some ginseng, with a letter saying that it would "strengthen the stomach, comfort the bowels, warm the blood, and frisk the spirits considerably." I think the last two circumstances are accomplished by being elected president of the State Society, for it certainly warms the blood and frisks the spirits exceedingly.

"I am glad, too, to succeed Dr. Harris, because Dr. Harris stands for a thing we appreciate more and more as we get older. He stands for character. No matter how much intellect a man has, if he has not the fundamental character and does not increase it as he grows older, he is merely sounding brass and a tinkling cymbal. I think Dr. Harris's life and work stand out not only for professional accomplishment but for his fine character as a man and as a physician. In that sense any one of us might be glad to follow him." (Applause.)

The Society then adjourned *sine die.*

BUSINESS SESSIONS

House of Delegates

The House of Delegates of the Medical Society of Virginia held its regular meeting at the Monticello Hotel, Norfolk, Virginia, at 9 A. M., October 13, 1926. The meeting was called to order by the first vice-president, Dr. T. D. Jones, of Richmond. Roll call showed an attendance of twelve councilors and forty-two delegates.

Dr. Olin West, Secretary and General Manager of the American Medical Association, was present and was called on to address the House. In a few words, he gave greeting from the A. M. A. and invited all members of our Society to visit the A. M. A. headquarters whenever in Chicago. He stated that he wished to assure the members of the Medical Society of Virginia of the real interest which the American Medical Association felt in our State organization.

The regular order of business was then resumed and reports of the Secretary-Treasurer were read.

Report of the Secretary-Treasurer

To the Members of the House of Delegates of the Medical Society of Virginia:

I have the honor to submit the following report:

Total membership reported at 1925 meeting	1,838	
New members enrolled since then	65	
Reinstated	9	
		1,912
Lost by		
Death	36	
Resignation	14	
Expulsion	1	
Non-payment of dues or lost	43	
		94
Net total		1,818

We have been advised during the year of meetings of the Executive Council, Publication and Legislative Committee, Walter Reed Commission, Committee for Revision of Constitution and By-Laws, and Committee for selecting a suitable memorial to Dr. Mettauer.

Drs. Southgate Leigh and S. S. Gale, regularly elected delegates, represented our Society at the Dallas meeting of the American Medical Association. We were unable to secure any one to act as our third delegate. At this meeting, one of our delegates, Dr. Southgate Leigh, introduced in the House of Delegates the resolution headed "Irregulars," which was referred to the Reference Committee and reported back, advising that every State Association be urged to co-operate with the American Medical Association in legislative matters and also requested the trustees of the A. M. A. to aid the State Associations in every possible way.

Dr. Leigh also introduced a resolution on medical education which was reported favorably by the Reference Committee and referred to the Council on Medical Education.

Last November, your Secretary attended the annual conference of secretaries of constituent State medical associations in Chicago, to which are invited both secretaries and editors of the state journals, expenses being paid by the American Medical Association. This conference is an excellent opportunity for learning that other states have troubles similar to our own and for obtaining ideas as to how some states are trying to solve their problems.

In accordance with action taken at our 1925 meeting, a committee composed of Dr. E. L. Kendig, chairman, and Drs. Charles R. Grandy and Francis H. Smith, was appointed by the Executive Council to draft a Constitution and By-Laws to be presented at this meeting. This committee has completed its work and will present its report.

The Executive Council likewise appointed a committee of three—Dr. A. G. Brown, Jr., chairman, and Drs. P. A. Irving and J. Allison Hodges—to consider the matter of placing a tombstone to mark the grave of Dr. John Peter Mettauer.

The secretary visited several county and district societies and announces the re-organization of Nansemond, Elizabeth City, Charlotte, Tazewell and Princess Anne County societies. The Southwestern Virginia Medical Society returned its charter, which included Montgomery, Pulaski, Wythe, Smyth and Washington counties and, in accordance with their request, were sent a new charter to include in addition to the above named, the counties of Carroll, Bland, Grayson and Giles, a total of nine counties. New charters were issued Cumberland County and the Pittsylvania-Danville Medical Society, it having developed that the city of Danville was operating apparently independently of the county and no record having been found that a charter had been issued either the city or county.

Two new district societies were organized—the Central District to include the counties within a thirty-five-mile radius of Farmville, and the Clinch Valley to include the counties in the Clinch River Valley. It is interesting to note that the Medical Women of Virginia have also organized with a membership of about twenty-five.

Two members reported suits for alleged civil malpractice. Only one of these asked for the assistance given by the State Society but later wrote that he would not need it as the case had been dropped.

Terms of five councilors expire at this meeting—Drs. Martin and Trout from the State-at-Large, and those for the First, Third and Tenth Districts. The Third District reports the nomination of Dr. Lawrence T. Price, of Richmond, as its councilor.

Several applications for membership in the State Society have been received from doctors residing

in counties in which there are no component societies.

During the year, we found in the office some papers which were evidently gathered in connection with a Medical and Surgical history of Virginia. We suggest that a committee be appointed to look over these and decide what disposition shall be made of them.

Though our membership is slightly smaller than last year at this time, we feel that there is a greater interest on the part of members generally in the welfare of the Society and take this occasion to thank officers and members for their constant cooperation.

Financial Report of Secretary-Treasurer for 1925.

STATEMENT OF CASH RECEIPTS AND DISBURSEMENTS FOR THE VIRGINIA MEDICAL MONTHLY AND THE MEDICAL SOCIETY OF VIRGINIA, FOR THE YEAR ENDING DECEMBER 31, 1925.

Cash in bank, January 1, 1925			$4,432.62
Total receipts, January 1-December 31, 1925		$17,136.21	
Total disbursements, January 1-December 31, 1925		14,009.16	3,127.05
Total on hand, December 31, 1925			$7,559.67

RECEIPTS

Virginia Medical Monthly			
Advertising	$7,353.38		
Subscriptions (non-members)	225.55		
Subscriptions (members at $2 each)	3,490.00		
Interest on bank balances	98.51		
Sundries	332.95		
		$11,500.39	
Medical Society of Virginia			
Dues less amount for journal and legal defense	$3,490.00		
$1 per member for legal defense	1,749.00		
Interest on bank balances	98.51		
Sundries	298.31		
		5,635.82	
			$17,136.21

DISBURSEMENTS

Virginia Medical Monthly			
Preparation of Journal	$7,422.79		
Salaries	2,000.01		
Postage	344.35		
Sundries	392.85		
		$10,160.00	
Medical Society of Virginia			
Salaries	$1,999.99		
Postage	296.20		
Sundries	1,335.36		
Legal Defense	217.61		
		3,849.16	
			14,009.16

Balance from 1925 receipts and disbursements	$ 3,127.05
Brought forward	4,432.62
Total balance in bank, December 31, 1925	$ 7,559.67

Available for legal defense	$4,908.14	
Available for operating expenses	2,651.53	
		$7,559.67

AGNES V. EDWARDS,
Secretary-Treasurer.

Motion was made that these reports be received and filed.

The report of the Executive Council was next read by its clerk, Dr. Walter B. Martin.

Minutes of the Meeting of the Executive Council of the Medical Society of Virginia.

The Executive Council met in Richmond, Va., February 13, 1926. The meeting was called to order by the chairman, Dr. A. L. Gray. The following members were present in addition to the chairman and the president: Dr. H. H. Trout, Dr. J. S. Davis, Dr. C. P. Jones, Dr. W. D. Kendig, Dr. I. C. Harrison, Dr. T. A. Kirk, Dr. C. B. Bowyer and Dr. W. B. Martin. Dr. M. T. McCulloch was present in the place of Dr. P. K. Graybill.

On motion of Dr. Trout, Tuesday, October 12th, was selected as the opening date of the State meeting.

On motion of Dr. C. P. Jones, Dr. J. H. Ayres was unanimously elected to fill the position on the State Examining Board from the First District.

The Chairman, Dr. Gray, reported a special meeting of the Legislative Committee in the fight against the proposed Chiropractic Bill. Dr. Trout moved that an appropriation, not to exceed six hundred dollars, be made to the Legislative Committee to meet the expenses incident to fighting the above bill. This was amended to provide that an itemized statement of the expenses be approved by a committee of the council members composed of the present chairman of the Council, President of the Society and the Secretary of the Council. Carried.

A committee composed of Dr. A. G. Brown, Chairman, Dr. Paulus Irving and Dr. J. Allison Hodges, was appointed to consider the erection of a suitable monument for the grave of Dr. J. P. Mettauer.

A committee of three, composed of Dr. E. L. Kendig, Dr. C. R. Grandy and Dr. F. H. Smith, was appointed to revise the Constitution and By-Laws.

A report from the auditing committee, Drs. McCulloch and Martin, was received and approved by the Council.

A motion was made and carried that the bond carried by the Secretary, Miss Edwards, and the insurance policy on the office fixtures, be turned over to the Chairman of the Council for safe-keeping.

On motion of Dr. Kendig, it was decided that the revised Constitution and By-Laws should be published in the VIRGINIA MEDICAL MONTHLY prior to the state meeting in October, 1926.

It was moved by Dr. Jones that a committee of three be appointed to invest the surplus funds of the Society. Motion carried. The committee consisted of Drs. Gray, Harris and Martin.

A letter was received from Dr. Southgate Leigh with the request for suggestions of matters to be brought up before the meeting of the American Medical Association. The Secretary was instructed to draft a suitable reply.

A letter was read from the Lumberman's Mutual Casualty Company in reference to physicians' liability insurance. No action was taken in this matter, pending further information to be obtained by the Secretary, Miss Edwards.

It was moved by Dr. Trout that the Publication Committee be commended for its action in the recent case of plagiarism in the VIRGINIA MEDICAL MONTHLY, and a letter be written congratulating them on the action. Motion carried.

A letter was received from the Roanoke Academy of Medicine asking for ruling of the Council as to the advisability of advertising in the lay papers, this advertising to be carried out along the lines used in Tulsa, Oklahoma, and of the general character as that backed by the Texas State Medical Association. After considerable discussion the question was

laid on the table until the next meeting of the Council.

On motion of Dr. Jones, the Chairman of the Council was authorized to issue charters to the county societies in the interim between meetings of the Council, subject to approval at subsequent Council meetings.

A communication was received from the Chicago Medical Society in reference to the propriety of appointing graduates who had received the degree of Doctor of Public Health, but were not graduates in medicine to positions that place them in charge of local health departments. After considerable discussion this question was also laid on the table until the next meeting of the Council.

It was moved and carried that the actual necessary expenses of the Councilors incident to attendance at this meeting of the Council be paid from the funds of the State Society.

Meeting adjourned.

WALTER B. MARTIN, *Clerk.*

This report was ordered to be received and filed.

Dr. Southgate Leigh, one of Virginia's delegates to the American Medical Association, gave a most interesting report of the Dallas meeting.

Report of Delegates to the American Medical Association.

The officers of the American Medical Association, at the Dallas meeting, realizing the enormous amount of work that the Association is doing, the great influence that it is exerting for the good of the profession and for humanity, and realizing how little the membership really knows of its productive efforts, made a special request of the delegates from the various State branches, to make the most comprehensive possible report at their annual meetings.

The task is a difficult one, and the time allotted to us too short. However, we shall attempt a brief resume of the various reports presented and of the action of the important committees.

Quoting from the address of the Speaker of the House:

"What the past year has wrought is clearly set forth in the report of the Board of Trustees. A delegate fails in his duty if he has not read this report. He doubly fails if he neglects to acquaint his State Society with these reports of their parent national organization and neglects thereby to obtain whole-hearted interest and support in his state for the work that is being accomplished. Your speaker is deeply impressed by the possibilities that can be made to result from the activities we are engaged in if our entire profession will but become actively concerned with them.

"May I not urge on you that as you return to your state society you will avail yourself of the opportunity and devote time and effort in securing an increasing degree of interest and extended sustained support to these activities. Surely we can no longer stand by in placid attitude when the opportunity is ours to a greater extent than ever before, to set forth these ideals and aims of the medical profession.

"As an Association, as units forming our federacy and as individuals, our professional and personal responsibility is divided into two general divisions: the pursuit of scientific study and research and the enhancing of our personal capabilities as physicians to apply these proved principles in the prevention and treatment of disease and, second, the education of the public as to the truths of scientific medicine." * * *

"It devolves on state and county units to pursue vigilantly a program of scientific activity that will enable its members to remain abreast of scientific progress and reflect that progress in their daily contact with their patients. They must guard against the mediocre, the obsolete, and bring up to standard the professional knowledge and work of their members. We lay ourselves open to justified criticism if organized medicine condones, by inactivity, the deficiencies and vagaries of its members. My earnest desire in this is for greater, well planned and concentrated instruction of members in order that they may receive sustained education abreast of the progress of our science. A higher, much to be desired standard and type of practice will then be evolved. This I hold to be an outstanding obligation of our county units—an obligation that is apparently neglected and to which state societies should devote thought and action. Your speaker recommends that this House direct the Secretary to refer our state societies to this problem." * * *

"Our science has made wonderful strides. We are able not only to prevent but also to cure many of the physical ills that beset mankind. We can extend the span of life and enhance it. But of what avail is this ability if we fail to disseminate this knowledge to the public? The public has evidenced an increasing eagerness to receive facts regarding scientific medicine from sources that are authoritative. Our federacy is that source and agency. Our responsibility is an outstanding one. The duty is ours to expend greater time and effort in imparting this knowledge. To do so, we must with concerted, well thought action, disseminate these scientific facts and refute the vagaries and fallacies of those who have, and are holding forth as pseudoscientists or as cultists and scientists on theories and principles that rest on a factless premise. By the imparting of the knowledge that we hold, by setting forth that which has been proved, we render a dual service to humankind in conserving physical health and relieving them of human ills and in exposing those who are posing as possessed of ability to treat disease by means and vagaries that are scientifically valueless."

Quoting from the address of President Haggard, before the House:

"Among the many activities of the Association during the last year, a persistent effort has been made to popularize the periodic health examination of the apparently healthy." * * *

"It would add not only years to life, but life to years. It would in all reality increase the scope of each individual's life by detecting the insidious maladies of all types in their incipience. The skill of the physician could be utilized in the anticipatory prevention of the many maladies whose early recognition makes for cure." * * *

"It is the insidious diseases of the great organs, the degenerative diseases, that especially go undetected unless an examination, even in apparent health, discloses their first evidences.

"The greatest field of the physician, which has been so long neglected, is the health guidance of his clientele. His judgment, wisdom, experience and knowledge can be massed in an attack against all forms of abnormal and unhealthful living, bad eating and environmental, and occupational disorders." * * *

"The publication of the 'Manual of Suggestions for the Conduct of Periodic Examinations of Apparently Healthy Persons,' which has been issued by the Association under the direction of the Bureau of Health and Public Instruction, is very complete and helpful and has been very well received by the profession. It should be in the hands of every physician in the United States." * * *

"It would seem, therefore, that on the county so-

ciety as a unit should be devolved the responsibility of giving every one of its members the information and the facilities, and further, through its cooperation, to bring the matter to the attention of every individual in the community."

Following these remarks, Dr. Haggard presented in detail his suggestions for carrying out the work in a systematic way, including special meetings of the county societies, special working committees and educational work through the press and lay organizations. (These suggestions appear in the *Department of Analyses, Selections*, etc., in current issue of the MONTHLY, page 542.)

Your delegates would suggest that the plan as outlined by Dr. Haggard be published in full in the Journal and that appropriate action be taken by the Council and House of Delegates.

The circulation and influence of the health journal, "*Hygeia*," has greatly extended and it is particularly gratifying to know that in the past year its annual loss has been reduced from $42,000.00 to $5,000.00 in round figures.

Virginia has 489 subscribers, of which 194 are doctors, and leads the Southern States with the exception of Missouri, 1,104, and Texas, 1,072. It would be a paying investment for every doctor to subscribe and keep several copies at all times on his waiting room table.

The large subscription list in Texas was due chiefly to the efforts of the Woman's Auxiliary, which organization is conducting a booth at this meeting and is prepared to take subscriptions from every doctor attending the meeting. "*Hygeia*" fills a long felt want for the profession, in that it tells the true story of medicine in language so simple that the public in general can and does appreciate it fully.

The House, acting on the report of the Board of Trustees, strongly disapproved the proposed bills in Congress granting hospitalization to all World War veterans for disabilities having no connection whatever with their service in the War.

A special committee of the Association, appointed by the Trustees, has had several conferences with General Andrews of the prohibition department with a view to changing the arbitrary rules so as to permit reputable physicians to prescribe alcoholic liquors where needed in sickness and in whatever quantities may be necessary. The General was reported as being favorable to the suggestion which will probably be presented to the next Congress.

Recognizing the growing importance of Physiotherapy, properly conducted in a reasonable and ethical way, this matter was placed in the hands of a special council with membership representing Physicists, Clinicians, Physiologists, and Pathologists.

"It is believed that through this council a great deal can be accomplished for the standardization of physical therapeutic methods and appliances, and that the interests of the medical profession and of the public will be safeguarded and promoted. It is unfortunately true that physical therapy has fallen largely into the hands of enthusiasts and faddists and, to an undue extent, into the hands of those who are not far removed from the status of quacks. More and more, however, qualified physicians, following the lead of a few conservative investigators and practitioners, are turning their attention to this field and are persistently striving to put physical therapeutics on a rational, scientific basis. The character of the men who compose the newly established Council is a guarantee to the medical profession and to the public that the work of this council will be done fairly, fearlessly, and in a thoroughly scientific manner."

The Secretary, Dr. West, stated that the Association now has 91,792 members, the largest in its history, 56,188 of these being Fellows.

Notwithstanding its length, we are presenting in full his statement regarding the County Societies:

"The county medical society is the fundamental unit in our scheme of organization. More than that, it is the essential factor in the record, whether of progress or otherwise, that may be made by medical organization as a whole. A constituent state association cannot permanently succeed, no matter how its own separate machinery may be developed, unless its component county societies are meeting their own responsibilities with reasonable efficiency. No more can the Americal Medical Association fully succeed unless its basic units are efficient. There are those things that must be done, and done well, by the county society for itself and for organized medicine as a whole. In building up the state association or the American Medical Association, great care should be taken to see to it that nothing is done to weaken the county society, whether by taking over the work it should do for itself or by any other method.

"As has been stated in reports theretofore submitted, there are, as is clearly shown by official reports from their own officers, too many county societies remaining stagnant. In many instances, persistent effort has been made to stimulate them into action without any measurable success. It might be worth while for the state association to undertake a careful survey, each within its own jurisdiction, with a view to making a final effort toward bringing every chartered component unit as now constituted into useful activity, or failing that, to effect organization anew by the combination of two or more counties into one society. This plan has already been tried to good advantage in some instances.

"Turning to a brighter side of the general picture, it is extremely gratifying to report that many county societies in all sections of the country are doing more and better work than ever before. Among these are some with relatively small membership. Their programs of work, scientific and otherwise, are prepared with care and carried out with inspiring enthusiasm. Such societies confer real benefits on their members and exert a most helpful influence in their own several communities. They are the strength of medical organization in the United States.

"It is easily apparent to any who will examine the facts that the scientific work of constituent associations and of active component county societies is showing constant improvement—in both quantity and quality. More and more the scientific programs are being made really purposeful. This appears to be largely due to the fact that the compilation of these programs is made the duty of qualified committees, elected officers, or otherwise. The programs are planned far enough ahead to give contributors ample time for the preparation of well thought out papers and discussions."

The Council on Medical Education and Hospitals reported that the number of medical schools is still held down to eighty, and that there has been an increase in Post-Graduate Schools to eighty-six. The number of the latter ten years ago was only twenty.

The average age at graduation is now 26.8.

Some progress has been made in the effort to cut down the age by shortening the preliminary school and college time and even the medical course itself.

A resolution presented to the House by one of your delegates urging that medical students be credited with courses taken during the Summer months, was approved and ordered sent to the various colleges for their consideration.

"The Council has established a ruling that no hospital will be considered as approved if other than

reputable graduates of acceptable medical schools are permitted to attend patients in them or are admitted to their staffs."

A special committee on nursing and nurse education was appointed for the purpose of a thorough investigation and recommendations, many complaints having come to the Association in regard to the difficulty in obtaining nurses for families of moderate means.

Regarding the title "Doctor," an interesting resolution was passed by the House, the last paragraph of which read as follows:

"Resolved, that it is the sense of the American Medical Association that, for the protection of the public, the title 'Doctor' in a medical sense be restricted to doctors of medicine and doctors of dental surgery."

Dr. Jabez Jackson, an eminent surgeon of Kansas City, was made President-Elect, and Washington selected for the meeting place next Spring.

In this connection your delegates would call attention to the fact that both at the California and Texas meetings, the local profession turned out in very large numbers, notwithstanding the great distance many of them had to travel.

The attendance from Virginia has never been large, though several meetings have been held at nearby places in the East. It is earnestly to be hoped that since Washington is so easily accessible by motor, train and boat, the attendance from Virginia shall be greatly increased. Nothing would do our State society more good, and close attendance on the meetings would be a great inspiration to the individual doctors of Virginia.

Your delegates would urge that vigorous steps be taken to bring about a record attendance.

The people of Dallas treated the Association royally, with a barbecue for 10,000 people, numbers of entertainments of various kinds, and a wonderful spirit of cordiality and good will.

The hotel facilities were ample and excellent, and transportation most convenient.

Our deepest regret was that so few were present from old Virginia.

SOUTHGATE LEIGH
S. S. GALE
Delegates.

This report was considered so important, that Dr. George J. Tompkins made a motion, seconded by Dr. C. P. Jones, and carried, that the report be published in full in the next issue of the State Medical Journal.

The next business in order was the reports of the Standing Committees.

MEMBERSHIP: The chairman, Dr. J. A. White, not being present, this report was deferred for a future meeting.

JUDICIARY: The chariman, Dr. William F. Drewry, stated that they had had no meeting during the year and had nothing to report.

Dr. Walter Cox, councilor from the Seventh District, stated that a member of the State Society who had been expelled from the Medical Association of the Valley of Virginia, was on the program to present a paper. He wished to know what action the House would take with regard to this member. It was found that this doctor resided in a county in which there was no society which was a component unit of the Medical Society of Virginia. After a great deal of discussion in which was emphasized the need of county organization to judge of the qualifications of its membership, it was moved by Dr. M. L. Anderson, with an amendment by Dr. I. C. Harrison, that this case be presented at once to the Judiciary Committee for investigation, in accordance with the regulations prescribed in the By-Laws. Seconded and carried.

LEGISLATIVE: Dr. H. U. Stephenson, chairman, stated that the only report he had to make was covered by the paper he had read on the preceding night, in which he emphasized the necessity of having a board composed of men of the various sciences appear before Legislature in the interest of upholding the higher standards of medical education in Virginia.

Dr. J. A. Hodges doubted the feasibility of such a plan and wished to know what sciences would be represented on the board recommended by Dr. Stephenson. He suggested the formation of a committee of ten men, one doctor from each Congressional District, to revise and study the Medical Practice Art, and to make any changes that might be deemed advisable. He stated that what we want is a uniform law for those practising medicine. In further discussion of this subject, Dr. L. T. Price offered a motion, which was seconded by Dr. Hodges, that a committee of three be appointed to consider the contents of Dr. Stephenson's and Dr. Hodges' papers, and to report at a special meeting at eight o'clock that night, at which time might be brought up any other views of importance.

In accordance with the above resolution, the chairman appointed Drs. L. T. Price, P. St. L. Moncure and T. S. Hening to make this investigation and report at a meeting that evening.

PUBLICATION—Dr. A. G. Brown, chairman, stated that his report was somewhat long and principally a resume of the work done by the Publication Committee. He suggested that, with the approval of the House, it might be received and placed on file for publication in the minutes. It was moved and seconded that this be done. Carried.

Report of Publication Committee.

In submitting a report to the House of Delegates the Publication Committee can only recite events that are well known to members of the Society. The work of the committee is more or less routine in nature. It is routine in that it attempts to conduct your monthly magazine or journal, and to provide a program for the annual meetings of the society. The excellent office management of the affairs of the VIRGINIA MEDICAL MONTHLY by Miss Agnes Edwards renders the problems and difficulties of the medical journal much less difficult for the committee. Indeed, I feel I voice the sense of the committee, in saying that Miss Edwards is quite indispensable to the VIRGINIA MEDICAL MONTHLY: her efficient service in the mechanical and technical operation of the magazine is of a high order, and, virtually relieves the committee of responsibilities which might otherwise be unassumable by them.

The Committee on Publication holds two important meetings each year for the purpose of getting out the program of the annual session.

1. In the late spring or early summer, the question of subject for a symposium is canvassed and selected, sub-divisions agreed upon, and readers invited.

2. In the late summer, complying with the By-laws, the committee meets to arrange the program for the various meetings of the annual session. It is difficult to shape the program for the various morning, afternoon and night sessions.

This is only difficult, however, because of the effort to arrange the subjects in some order and correlation, and, at the same time, to give each member as good a place on the program as possible. A so-called good place, in point of time, is attainable to all, if the membership of the society would only follow the practice of sitting the program through,

and, of coming in promptly at the appointed hour. The Society membership should be urged to realize the importance, so far as possible, of giving members who have prepared papers the favor of prompt attendance upon the sessions. It is difficult under the present By-Laws to get fifty papers, of twenty minutes' duration, into the program (together with social functions and business sessions and the special order of the symposium) without carrying a considerable number of papers over to Friday morning session.

So it is the opinion of the Program Committee that the time of the papers should be reduced to fifteen minutes, the meetings should be earlier in the morning, and the social functions should be fixed so as not to use the session hours.

The committee has had, within the last two years two special meetings for the purpose of considering and acting upon charges of plagiarism. You are, no doubt, familiar with these unpleasant instances and I shall not review them here. I only mention them to emphasize our purpose, which we know receives your approval, to keep the publication of this society on the highest standards of ethical and moral plan, endeavoring always, as a State publication, to make it merit favorable criticism for its literary and scientific matter. The latter qualities are, of course, relative and can be attained the better only through application, effort, and scientific purpose.

In the preparation of papers, it seems wise for authors to cite the publications used in getting together the material of the paper; to use quotation marks where words of the authors are employed, to give credit to previous authors when thoughts and words are used. This will do much to prevent the unfortunate acts of plagiarism which we were compelled to expose in the VIRGINIA MEDICAL MONTHLY. It is indeed a pleasure to say, as is known, that no member of this society was implicated in either of these infractions of the code of laws governing responsible authorship.

The editorial efforts of the VIRGINIA MEDICAL MONTHLY have been directed to the policy of attempting to bring to the reader an interpretation of medical and scientific work of the day as found in current literature. It was thought that discussions in brief of scientific subjects were more beneficial than an attempt to discuss secular or professional matters or political or economic subjects. It was with this point of view that our editorials were presented.

Before closing this report, as chairman of Publication Committee and Editor, I wish to express the deep appreciation felt for the high quality of work rendered the State Society by Miss Agnes Edwards, in the work on the journal. In this statement I feel sure I voice the feeling of the other members of this committee.

Respectfully submitted,

ALEXANDER G. BROWN, JR.,
Chairman, Publication Committee.

Under the heading of Special Committees, the following reports were called:

HOSPITALS: No report. It was announced at a later meeting that a letter had been received from Dr. Gale, which showed that the committee was active, though they had no special report to make at this time.

NECROLOGICAL: It was stated that the names of the thirty-six members whose deaths had been reported since the 1925 meeting, were read at the opening session on Tuesday. The list is as follows:

List of Members of the Medical Society of Virginia Whose Deaths Have Been Reported Since 1925 Meeting.

Dr. Lanier Dunn Pole, Hot Springs, Va.
Dr. James Barbour Boldridge, Winston, Va.
Dr. Andrew Jefferson Nelson, Seattle, Wash.
Dr. Edwin M. Newsom, Newport News, Va.
Dr. Thomas Dunn Hutton, Glade Spring, Va.
Dr. Stephen Harnsberger, Warrenton, Va.
Dr. William Morgan Smith, Berryville, Va.
Dr. Charles Howard Lewis, Richmond, Va.
Dr. James Bassett Rawlings, Lawrenceville, Va.
Dr. John William Holmes, Pulaski, Va.
Dr. John Randolph, Arvonia, Va.
Dr. George Grattan Painter, Pulaski, Va.
Dr. Philip Turner Southall, Amelia, Va.
Dr. Lawrence Ingram, Richmond, Va.
Dr. George Ross, Richmond, Va.
Dr. Emory Hale Connelly, Alberta, Va.
Dr. Harry Gilmore Carter, Burkeville, Va.
Dr. Lemuel Cornich Shepherd, Norfolk, Va.
Dr. George Burley Martin, Oteen, N. C.
Dr. William Edward Anderson, Farmville, Va.
Dr. Robert Scott Spilman, Lexington, Va.
Dr. Marshall Price Jones, Churchville, Va.
Dr. John E. Coles, Alberene, Va.
Dr. Benjamin W. Cohn, Norfolk, Va.
Dr. Readding Lloyd Williams, Norfolk, Va.
Dr. Powhatan Moncure, Bealeton, Va.
Dr. Ludwig Mendelsohn, Norfolk, Va.
Dr. Burnley Lankford, Norfolk, Va.
Dr. William Clayton Orr, Leesburg, Va.
Dr. Wirt Peebles Marks, Claremont, Va.
Dr. William Sterling Woody, Hopewell, Va.
Dr. John Bernard Halligan, North Emporia, Va.
Dr. Robert Eugene Wine, Nokesville, Va.
Dr. William Joseph Jones, Crozet, Va.
Dr. Morand Lee Stallard, Appalachia, Va.
Dr. Humphrey Singleton Belt, South Boston, Va.

LIBRARY: Dr. I. C. Harrison, chairman, stated that his report was practically the same as last year, except that Miss Edwards had suggested that some of the older volumes might be given to the State Library to make room for new books which might be received. It was moved, seconded and carried that this report be received and filed.

COOPERATION WITH STATE DEPARTMENT OF HEALTH IN CHILD HYGIENE WORK: No report.

COOPERATION WITH STATE NURSES' ASSOCIATION: Dr. J. A. Hodges stated that he had no report to make at this time, but would likely adopt suggestions to be reported at a later meeting.

CANCER: No report.

PUBLIC HEALTH AND EDUCATION: Dr. R. K. Flannagan, chairman, presented a report and offered two resolutions, one on a public information committee, and the other on periodical examination.

Report of the Public Health and Education Committee, Medical Society of Virginia.

The report of your committee last year confined itself solely to the public health aspects of its duties and resulted in the adoption of a resolution reiterating the Society's adherence to the principles of preventive medicine and urging the establishment by cities, towns and counties of whole-time public health services and further urging the local societies to appoint public health committees to study local public health needs and advise as to how such needs may be met. This action gives your committee a point of departure in the public health field which has been largely lacking to the Society since the reorganization of the State Board of Health in 1908.

In the judgment of your committee the medical profession is an indispensable adjunct to the proper

administration of public health work and should continue to actively interest itself in the development of this paramountly important community service. It is recognized, however, that a mutual understanding between the State Board of Health and the organized medical profession of any community is essential to the success of any proposed public health development, and it is the view of the committee that no measures should be undertaken by the State Board of Health that may be reasonably regarded as detrimental to the true interests of the physician.

Education

It seems to the committee that in order to carry out the implications contained in the word "Education" in its designation, that it must as in the case of the Public Health phase of its duty, establish with the local societies a proper point of departure from which to achieve results. The physician as an individual and a business man is at a great disadvantage with other professions and occupations. He has no such open forum as the courts furnish to the lawyers for the display of his talents. He cannot advertise himself and his abilities in the public prints as do merchants, manufacturers, pathists and cultists of all sorts. He must look therefore to his individual contacts for the establishment of his reputation and his fortunes. The general public, in the main uninformed in scientific matters, incapable of accurate thinking and accustomed to buying the most blatantly advertised article, is under a great handicap in the choice of medical advice and treatment, since the quack, patent medicine man and cultist blare at him on all sides the "supreme value" of their wares. To meet this situation, your committee advises that each affiliated society be asked to consider the advisability of the appointment of a standing committee on public information whose duty it would be to furnish to the local papers from time to time medical information from authoritative sources as an offset to the pseudo-scientific nonsense and quackery so injuriously promulgated through certain types of magazines and through the advertising columns of the press.

Public Health

Specifically in the preventive medicine field your committee wishes to call attention of the Society to the high death rate among men and women from forty to sixty years of age and to the responsibility resting upon the medical profession to devise plans and aid in every practicable way well-considered methods for prolonging the life of citizens whose health is being undermined by lack of knowledge so readily available from the regular medical profession.

As a start in this direction the committee recommends that affiliated societies as far as practicable be urged after the manner of the Kings County (New York) Medical Society to organize group clinics, made up of physicians representing the various divisions of medical practice in their locality, for the detailed examination periodically of its own members according to accepted standards in order:

1. That the physical well-being of the local profession be assured.

2. That as large a number as possible of the physicians in the Society shall become thoroughly familiar with a systematic and uniform technique of the most approved method of physical examination.

The experience gained by the conduct of clinics of this character will be of utmost value in enabling the Society to formulate a wide-spread program for securing the general adoption by the public of periodic examinations by the family physician.

Respectfully submitted,

Dr. Roy K. Flannagan, *Chairman.*
Dr. J. H. Hiden,
Dr. C. B. Bowyer,
Dr. James Morrison,
Committee.

The following resolutions are offered by the committee and are designed to put into effect the foregoing suggestions recommended by the Public Health and Education Committee:

Resolutions on Public Information Committee

Whereas, many magazines and periodicals as well as advertising columns of both the religious and secular press are filled with misleading statements concerning the ailments of human kind and alleged means of cure, and,

Whereas, the body of science the regular physician represents makes him custodian of knowledge in disproof of much of this dangerous and purely commercial propaganda, and since such knowledge should be available in greater degree to the public than at present, therefore be it

Resolved, That the Medical Society of Virginia hereby urges upon affiliated societies the advisability of appointing a standing committee on public information composed of carefully chosen members who in simple language in the name of the Society will furnish from time to time to the local press medical and public health information of an authoritative character.

Resolutions on Periodical Examination

Whereas, the advisability of periodic medical examinations of apparently healthy individuals is universally recognized as a highly desirable procedure for men and women past forty years of age and if universally adopted would prevent the loss yearly of great numbers of the most valuable members of society, and,

Whereas. periodic medical examinations have not in any general way been adopted by the public as a routine measure, be it

Resolved. That the Medical Society of Virginia encourage the affiliated societies to organize clinical units from among their membership which will first examine according to modern methods of procedure their own membership or such of them as will avail themselves of the privilege, to the end that data may be secured and plans may be formulated to eventually furnish the public generally, at a cost within reach of all, the benefit of such service.

Dr. A. L. Gray stated that these two resolutions were so pertinent and valuable that he would like to move their adoption. This was seconded and carried.

Walter Reed Commission: Dr. E. C. S. Taliaferro, chairman, reported that his committee had been very active in its work and had secured the promise of co-operation from a number of societies. He stated that the Commission has an option on the Walter Reed home in Gloucester County, Virginia, and he hopes they be in position to purchase this shortly. The plan of the Commission is to have individual subscriptions of small amounts, rather than that a few men should purchase the place, which should be in the nature of a medical shrine. It is thought that a more definite report can be made next year.

It was moved, seconded and carried that Dr. Taliaferro's report be received and filed.

Medical Officers' Reserve Corps: No report.

The Committee on the Memorial to Dr. J. P. Mettauer made the following report through its chairman, Dr. A. G. Brown, Jr.:

Report of Committee on Memorial to Dr. J. P. Mettauer.

A committee, composed of Dr. Paulus A. Irving, J. Allison Hodges and Alexander G. Brown, Jr., chairman, was appointed by the Executive Council of the Medical Society of Virginia, at a meeting February 13, 1926, to consider the subject of the erection of a suitable monument over the grave of Dr. John Peter Mettauer. The committee was directed to report its recommendations at this meeting.

Epitomizing a few of the salient features of the excellent address of the President, at the opening meeting of the Society, last night, John Peter Mettauer was born June 24th, 1787, and died November 22nd, 1875, at his home in Prince Edward County, Virginia, in the eighty-eighth year of his age, having practiced medicine for nearly seventy years.

He was born of a distinguished father, Dr. Francis Joseph Mettauer, who was surgeon-general and medical director in the forces of Rochambeau. After the surrender of Cornwallis, being attracted to Virginia, he settled in Prince Edward County, where John Peter Mettauer, the subject of our report, was born.

Dr. John Peter Mettauer began the practice of medicine in his native county in 1809, at the age of twenty-one years, practicing with his father. Soon, under the effect of his brilliant mind and evident skill in practice, his name became a household word in all that country and his services were sought by a large and increasing clientele. Later, through the development of his knowledge and the operation of his genius, he became distinguished as a surgeon. The originality of his work, the remarkable scope of his operative powers, and distinct success attendant upon his remarkable surgical feats, made him nationally known. The wide range of this pioneer in the domain of surgery makes one, in these days, wonder in admiration at this heroic Virginian.

But this is not all. To his skill as physician and surgeon, he added the accomplishments of an eminent teacher, and organizer and conductor of a medical school, and besides, contributed liberally with his pen to medical literature, with a style and substance of notable quality.

Over this distinguished physician's grave, as he lies in the college burying ground at Hampden-Sidney, there is no monument or marker. Your committee, therefore, begs leave to recommend that the Medical Society of Virginia, from its funds, cause to be erected a suitable marker (or monument) over the grave of this eminent physician, setting forth in appropriate phrase a statement of his distinguished service to the people of his State and Nation.

Respectfully submitted,

Alexander G. Brown, Jr.,
Paulus A. Irving,
J. Allison Hodges,
Committee.

It was moved, seconded and carried that this report be adopted and filed.

The Committee on Revision of the Constitution and By-Laws was called for its report. Dr. E. C. S. Taliaferro moved that, as a discussion of this would occupy some time, the report be deferred until Thursday morning, at 10 o'clock, by special order. This was seconded and carried.

The chairman of the committee, Dr. E. L. Kendig, stated that the proposed draft was published in the August issue of the Virginia Medical Monthly, reprints of which were available, and suggested that each member secure a copy and be prepared to present any amendments in writing at the special meeting of the House, at which time the articles and sections should be taken up in regular order.

It was stated that the secretary had several communications which should have some attention. These were referred to a committee of three—Dr. Isaac Peirce, chairman, and Drs. P. E. Tucker and William Meyer—for recommendations.

There being no further business, the House adjourned to hold a special meeting that evening, at 8 P. M.

EXECUTIVE COUNCIL

The Executive Council of the Medical Society of Virginia held its regular meeting in Norfolk, Virginia, October 13th, 1926, at 5 P. M.

The meeting was called to order by the chairman, Dr. A. L. Gray. All members were present or represented by alternates. Dr. O. R. Yates, Suffolk, was alternate for Dr. J. Gates Goode; Dr. A. T. Finch, for Dr. W. D. Kendig; Dr. J. D. Willis, for Dr. Allen Kirk, and Dr. M. T. McCulloch for Dr. P. K. Graybill.

As some of the members had to leave before the close of the meeting, it was moved and seconded that the nomination of officers be taken up out of order. The nomination for President being called for, Dr. I. C. Harrison placed the name of Dr. J. Shelton Horsley before the Council. This was seconded by Dr. Trout. There were no further nominations before the Council, and, on motion, the Secretary was instructed to cast the unanimous vote of the Council for Dr. Horsley.

The following were nominated unanimously for the following offices: Dr. J. Warren White, Norfolk, first vice-president; Dr. L. T. Royster, University, second vice-president; Dr. P. W. Boyd, Winchester, third vice-president; Miss Agnes Edwards, Richmond, secretary-treasurer.

The following delegates to the American Medical Association were nominated for a period of two years: Dr. Stuart McGuire, Richmond; Dr. J. W. Preston, Roanoke. Alternates: Dr. E. C. S. Taliaferro, Norfolk; Dr. E. G. Williams, Richmond.

The standing committees were taken up separately. Dr. P. W. Miles was nominated to take the place of Dr. Lewis Holliday on the Membership Committee. This change was made in order to provide for representation from each district on this committee. The present members of the Legislative, Judiciary and Publication Committee were re-nominated.

Two vacancies occurred on the Council from the State-at-Large, and Dr. George J. Tompkins, of Lynchburg, and Dr. E. C. S. Taliaferro, of Norfolk, were nominated for these.

The question of appropriating funds for the erection of a suitable monument to mark the grave of Dr. Mettauer having been referred to the Executive Council, Dr. Harrison moved that a sum not to exceed $300.00 be expended for such a monument. This motion was seconded and carried. The same committee was appointed to have charge of the selection of the monument as previously elected.

The question of advertising in the lay press along the lines used in Tulsa, Okla., and of the general character as that backed by the Texas State Medical Association, having been previously communicated to the Council by a member of the Roanoke Academy of Medicine, was taken up in discussion. On motion duly seconded, it was decided that the Council at present does not approve of this plan.

The communication previously received from the Chicago Medical Society and also letter received from the Louisiana State Medical Society in reference to

the propriety of appointing graduates who had received the degree of Doctor of Public Health, but were not graduates of medicine, to positions that placed them in charge of local health departments were taken up and considered. On motion, duly seconded, it was recommended that this question be referred to our delegates to the American Medical Association, with the request that they take this matter up with the proper committee of the House of Delegates of the A. M. A.

The Council having before it no invitations for the next annual meeting of the Society, it was moved and seconded that decision of this point be reserved until the meeting of the House of Delegates at 8 P. M., this date.

There being no further business before the meeting, motion to adjourn was made and carried.

HOUSE OF DELEGATES

The House of Delegates held a special meeting at 8 P. M., October 13, Dr. T. D. Jones, vice-president, presiding.

Dr. William F. Drewry, chairman of the Judiciary Committee, reported that he was unable to get a meeting of his committee. He also reported that he had considered the matter of Dr. A. W. Graves being on the program and found nothing in the By-Laws to prevent his appearing as scheduled.

The committee appointed at the morning session, composed of Dr. L. T. Price, chairman, and Drs. P. St. L. Moncure and T. S. Hening, presented the following report on the recommendations contained in the papers of Drs. J. A. Hodges and H. U. Stephenson, read at the opening session:

Your committee respectfully submits the following recommendations:

1. That the Medical Society of Virginia re-affirms its approval and adherence to the medical laws of this State (chapter 68, regulating the practice of medicine), and pledges its continued professional support in their administration.

2. That it discountenances at the present time any addition to the membership of the State Medical Examining Board.

3. That it memorializes the House of Delegates at this session to consider, and if possible, formulate some definite plan for dealing with the medico-legislative problem, as follows:

That for this purpose, it offers for its consideration the following plan: The appointment by the Chairman of the Executive Council of the State Society a Professional Relations Committee, consisting of three physicians resident in each councilor district, who shall have charge locally, with the Chairman of the Executive Council and the Chairman of the Legislative Committee of the Society of all medico-legislative problems that may arise in such districts.

That these local committees in each Councilor district shall have the right to organize according to their own preferences, and shall have the authority to associate with themselves such local medical, educational, religious, health and lay associations, especially the Woman's Auxiliary, as they may deem proper, the local chairman keeping the State Councilor chairman fully informed, and he, in turn to keep in contact with the State Legislative Chairman in all matters relating to medical legislation. In brief, the dominant purpose in all this is to develop direct contacts through associated and helpful agencies in the home districts that will educate the lawmakers and the public to secure the enactment of constructive legislation designed for the common good, and these local committees shall endeavor to obtain an expression of the views of the several candidates for nomination to the Senate and Legislature of Virginia, with regard to supporting the present Medical Practice Act.

Respectfully submitted,

LAWRENCE T. PRICE, *Chairman*,
P. S. MONCURE,
THOS. S. HENING.

It was moved and seconded that this report be adopted. Carried.

Dr. J. A. Hodges then made the following motion, which was seconded and carried:

Resolved, That Dr. J. W. Preston, secretary of the State Board of Medical Examiners, with ten associates whom he may select, together with the chairman of the Legislative Committee of the State Society, be authorized to submit at the next annual meeting of the House of Delegates, or, if necessary, to the Executive Council, such changes and additions to the existing medical laws of the State as they may deem wise and proper, and also name the time when these measures should be presented to the Legislature, and this committee is further authorized to spend such a sum of money as is needed, to carry out these requirements, an itemized account for the above necessary expenses to be kept and presented to the Executive Council for payment.

Following this, Dr. J. A. Hodges stated that he had been thinking over the report made at the morning session of the House by Dr. E. C. S. Taliaferro, chairman of the Walter Reed Commission, and he felt that our Society should take some very definite action to honor the memory of Dr. Walter Reed. He offered a resolution, which was seconded and adopted, that the Executive Council be asked to appropriate the $1,000.00 necessary to purchase "Belroi," the birthplace of Dr. Walter Reed, in Gloucester County, Virginia, and that the deed to the place be turned over to the Walter Reed Commission as a gift from the Medical Society of Virginia, the Commission to place a tablet stating that the house is presented to the Nation and the profession by the Medical Society of Virginia in honor of Dr. Walter Reed.

There being no further business, the House adjourned to meet at 9 A. M., Thursday morning.

EXECUTIVE COUNCIL

The Executive Council held a called meeting, Wednesday evening at 9 P. M., Dr. A. L. Gray, chairman, presiding.

Present: Drs. J. S. Davis, C. P. Jones, Israel Brown, A. T. Finch (alternate for Dr. W. D. Kendig), J. D. Willis (alternate for Dr. T. A. Kirk), I. C. Harrison, Walter Cox, and M. T. McCulloch (alternate for Dr. P. K. Graybill).

The purpose of this meeting was to take action on the resolution which was referred to it from the special meeting of the House of Delegates, that the Executive Council appropriate $1,000 to purchase "Belroi," the birthplace of Dr. Walter Reed, in Gloucester County. It was moved, seconded and carried that the $1,000 be appropriated for this purpose in accordance with the resolution adopted in the House of Delegates.

A motion was made and adopted that a telegram be sent Dr. P. B. Barringer, an ex-president of the Society, expressing regret because of his inability to attend this meeting and extending to him the good wishes of the Society.

There being no further business, the Council adjourned.

HOUSE OF DELEGATES

The House of Delegates of the Medical Society of Virginia held a regular meeting October 14, 1926, at 9 A. M., the second vice-president, Dr. Geo. J. Tompkins presiding.

The roll call showing a quorum, the secretary read a report of previous meetings, which with a slight correction, were ordered received and filed.

The report of the Executive Council was read, which was likewise ordered received and filed.

Dr. J. A. White, Chairman of the Membership Committee recommended that the following applicants for membership residing in counties with no or inactive Societies, be received as members:

Dr. F. W. Gearing ----------Woodstock
Dr. David W. Kelly, Jr.----------Culpeper
Dr. John L. Thornton ----------Warrenton
Dr. J. L. Blanton ----------Fieldale
Dr. E. R. Miller----------Harrisonburg
Dr. C. W. Segar----------Burkeville
Dr. A. B. Schilling--U. S. James River Fleet

Moved and seconded that his report be accepted.

The following officers are nominated and elected: Dr. J. Shelton Horsley, Richmond, President; Dr. J. Warren White, Norfolk, First Vice-President; Dr. L. T. Royster, University, Second Vice-President; Dr. P. W. Boyd, Winchester, Third Vice-President; Miss Agnes Edwards, Richmond, Secretary-Treasurer.

Delegates to the American Medical Association for a term of two years: Dr. Stuart McGuire, Richmond; Dr. J. W. Preston, Roanoke. Dr. Southgate Leigh, Norfolk, and his alternate, Dr. C. C. Coleman, Richmond, elected last year for a period of two years, hold over.

Alternates to Delegates for a two-year term: Dr. E. C. S. Taliaferro, Norfolk, and Dr. E. G. Williams, Richmond.

Councilors from the State-at-Large: Dr. Geo. J. Tompkins, Lynchburg; Dr. E. C. S. Taliaferro, Norfolk; First District, Dr. Geo. J. Williams, Hilton Village; Third District, Dr. Lawrence T. Price, Richmond; Tenth District, Dr. M. T. McCulloch, Troutville.

There was added a new member to the Membership Committee, Dr. P. W. Miles, Danville. No changes were made in the personnel of the Judiciary, Legislative and Publication Committees.

It was announced that no invitation had been received for next year's meeting.

A resolution was adopted to expend a sum not to exceed $300.00 to place a suitable marker over the grave of Dr. J. P. Mettauer, and that the committee which recommended this action, be continued to complete the work.

A resolution was adopted that the Medical Society of Virginia appropriate $1,000.00 for the purpose of buying "Belroi," the birthplace of Dr. Walter Reed, in Gloucester County, Virginia, and that the deed to the place be turned over to the Walter Reed Commission as a gift from the Medical Society of Virginia to the Commission; and that a tablet be placed by the Commission, stating that the house is presented to the Nation and the profession by the Medical Society of Virginia, in honor of Doctor Walter Reed.

The committee composed of Drs. Peirce, Tucker and Meyer, appointed for the purpose of deciding what disposition should be made of some special correspondence, presented recommendations with regard to same and the Secretary of the Society was instructed to answer each letter as indicated.

The Committee on the Proposed Constitution and By-Laws submitted its report. It was moved that the report be received. There being a second to this, an amendment was offered that the articles be read seriatim and acted upon in order. This motion was adopted as amended.

The various articles and sections were then read:

In the Constitution, Article VI (The Council), the second sentence was amended to read "The council shall consist of the President, President-elect, and one member from each Congressional District of the State, elected by the House of Delegates on nomination of the delegates from each District.

Under Article IX, of the Constitution, the following was added as the last sentence—"Automatic succession of the President-elect to the presidency may be provided for in the By-Laws."

Article X of the Constitution should read, "There shall be an annual session of the Society and the date and place of meeting shall be determined by the House of Delegates."

The following sentence was added to Article XI, Section 11, of the By-Laws, "Once a year, not later than July 1st, the secretary of each component society shall send a list of its members to the Executive Secretary of the State Society."

It was moved and seconded that this report as amended be accepted and filed.

There being no further business before the House, the meeting adjourned.

The above report was presented before the general meeting on Thursday afternoon, the 14th, at 5 P. M., by special order, and was approved as read.

Following the adoption of the report of the House of Delegates, Dr. E. L. Kendig moved that the Constitution and By-Laws, just adopted, be put into effect "*in toto*" at the end of the 1927 annual session, but that the part of the said Constitution and By-Laws providing for the election of a House of Delegates be put into effect in time for the election of a House of Delegates for the 1927 annual session, and that all officers, delegates to the American Medical Association, and committeemen, be selected at the 1927 annual session under the provisions of said Constitution and By-Laws. Adopted.

At a called meeting of the Executive Council, this afternoon, Dr. L. T. Price, Richmond, was elected chairman, and Dr. E. C. S. Taliaferro, Norfolk, clerk, for the ensuing year.

Under miscellaneous business, at the closing session, Friday morning, October the 15th, Dr. J. Shelton Horsley offered a resolution of thanks to the Norfolk County Medical Society, the Norfolk ladies, and the Monticello Hotel management for the entertainment and hospitality extended the members of the Society. This was seconded and adopted.

The name of Major Guy Qualls, M. C., U. S. A., stationed at Fort Eustis, Va., was approved for associate membership, upon the recommendation of Dr. P. E. Tucker.

As the closing hour had come, the retiring president, Dr. W. L. Harris, requested Drs. Israel Brown and Charles R. Grandy to induct the newly elected president, Dr. J. Shelton Horsley, into office. Following a short speech of acceptance of the presidency, the fifty-seventh annual session of the Medical Society of Virginia adjourned *sine die*.

AGNES V. EDWARDS,
Secretary-Treasurer.

Report of Delegates to Fourth Annual Convention of the Woman's Auxiliary to the American Medical Association.

The general meeting was held in the Palm Garden of the Adolphus Hotel, Dallas, Texas, April 21, 1926.

The meeting was called to order by the

President, Mrs. Seale Harris, of Birmingham, Alabama. It was a very large and enthusiastic gathering.

Reports from twenty-four states were read showing the principal work done was co-operating with the medical profession in every way; supporting the Medical Practice Act; assisting the Public Health and Welfare organizations; and educating the public in health matters.

The Auxiliaries were asked to study the health laws in each county and to offer their assistance.

They were asked to tell the "True Story of Medicine" and to urge periodical health examinations, made by regular physicians and not by commercial organizations.

There were many interesting reports from the states, and there was much applause when the report from the Virginia Auxiliary was read, telling of the stand our women had taken with their husbands in fighting the Chiropractic Bill, and of our victory in Virginia.

The Pennsylvania women had also helped to defeat this bill in their state. They report monthly in the *Atlantic Medical Journal*. Their Auxiliary has grown to 754 members in a year. The principal work done is educational, especially cancer control.

Mississippi has a health and sanitation department in their daily paper, edited by a woman and published once a week. They are furnishing a health camp and co-operating with the State Health and Anti-Tuberculosis Associations.

The following is a report of one county in Missouri. Buchanan County is the Banner Auxiliary in the United States promoting "*Hygeia*."

"The money for '*Hygeia*' was supplied for sixty-three subscriptions by proceeds from a card party given by the Auxiliary. These first subscriptions were placed in the rural schools of Buchanan County. Then we appealed to the Medical Society to assist us in placing as many subscriptions as possible in our city schools. The proposition appealed to them so, from their exchequer, they have given us money for 160 subscriptions.

"Still we were not satisfied; so we sent a committee to call on individual doctors and received enough for 51 subscriptions more. In addition to these subscriptions, which were to be donated to teachers, etc., we worked for individual subscriptions from doctors, nurses, parent teachers' association, etc., and received sixty in all. These sixty we consider permanent *bona fide* subscriptions. Three hundred and twenty-five subscriptions in all were sent in in 1925 and eight so far in 1926, making a total of 333 for our auxiliary year."

There were splendid addresses from the two presidents of the American Medical Association, Dr. Wendell Phillips, and the retiring president, Dr. W. D. Haggard. There was also one from Dr. Dodson of the American Medical Association.

Dr. Phillips said, "his first auxiliary to success was his wife," and he had found there was much good work being done by the doctors' wives, besides courage, loyalty and devotion to their husbands. He complimented the Auxiliary for their splendid work in helping to stamp out a deadly menace to Public Health and appealed to the Auxiliary for assistance in preventive medicine.

Mrs. Seale Harris and Mrs. Gengenbach, the two Auxiliary presidents, gave most inspiring talks and much good work was accomplished.

The entertainment side of the meeting was very wonderful. The Dallas Auxiliary was well organized and the entertainments were planned with a great deal of system.

A barbecue for 10,000 guests was given by Dr. and Mrs. Dean.

A Mexican lunch given by the Medical men was for the same number of people.

There was a garden party attended by 1,000 women given by our next national president, Mrs. H. O. McReynolds, of Dallas.

A trip to Fort Worth with a drive and luncheon at the beautiful Woman's Club was given to 350 women by the Woman's Auxiliary of Fort Worth.

The beautiful luncheon at the Country Club was given by the club women to the officers of the Woman's Auxiliary and honoring Mrs. Wendell Phillips, Miss Haggard and Mrs. William Mayo.

The Dallas Auxiliary gave a Roof Garden party and musicale to 1,000 women.

A dinner and garden party, honoring the A. M. A. officers and delegates with their wives, was given by Dr. and Mrs. Cary.

There were numbers of small teas, dinners and banquets.

The President's reception and ball was so large that the two hotel ballrooms, Adolphus and Baker across the street from each other, were used.

The next meeting will be held in Washington and all of you are urged to attend with your husbands, to get the real vision of the Woman's Auxiliary.

Mrs. S. S. Gale, *Delegate*,
Roanoke, Va.

The Rockbridge County Medical Society

Met October 1st, at the home of Dr. and Mrs. E. P. Tompkins in Lexington. Dr. Robert Glasgow, Lexington, presided. The members present were: Drs. Glasgow, Davidson, Leech, Mapp, Mitchell, McClung, Thurman, Tompkins, White, and Vaden. The wives of members had also been asked to attend, and a number of the ladies were there. Some of the doctors and wives living at a distance were probably deterred from coming by reason of the very rainy evening, and slippery roads.

The event of special interest on the program was an address on Radium, given by Dr. A. P. Jones, of the Jefferson Hospital, of Roanoke, an invited guest. His talk was highly instructive and entertaining.

In the election of officers for the ensuing year, the choice for president fell upon Dr. E. P. Tompkins, with Dr. J. E. Seebert and Dr. C. H. Davidson as vice-presidents, and Dr. Howard Mitchell for secretary-treasurer. Dr. Tompkins was selected as the delegate to the State Medical Society meeting in Norfolk.

Upon adjournment of the meeting, the ladies served sandwiches and coffee, and a social hour was enjoyed by all present.

E. P. Tompkins,
Secretary.

Roanoke Academy of Medicine.

The first meeting of the Academy for the year 1926-1927 was held October 4, 1926, at which time the following officers were elected for the coming year: President, Dr. Alvah Stone; vice-presidents, Dr. Paul Davis, and Dr. F. A. Farmer; secretary-treasurer, Dr. Fred E. Hamlin, all of Roanoke.

Delegates to the State meeting were Drs. M. A. Johnson, J. D. Willis, and F. A. Farmer. In the event any of these could not attend they were instructed to appoint their own alternates.

The report of the Judiciary Committee stating that Dr. H. B. Dean did not meet the requirements for membership in the Roanoke Academy of Medicine at the time he was elected was read and accepted. He has now passed the Virginia State Board and would be eligible for membership if he cares to make application for re-election.

Paul Davis,
Secretary.

Warren-Rappahannock-Page County Medical Society.

According to information recently received at this office, Dr. L. F. Hansbrough, Front Royal, is president of this Society, and Dr. Giles B. Cook, also of Front Royal, secretary-treasurer. Dr. James G. Brown, Woodville, was elected delegate and Dr. E. R. Browning, Flint Hill, alternate to the Norfolk meeting of the State Society.

The Lunenburg County Medical Society

Held its regular meeting October 1st, at Victoria, at which time Dr. Harry E. Whaley, Victoria, was elected president, and Dr. J. F. McClellan, Kenbridge, secretary for the coming year. Dr. Whaley was elected delegate, with Dr. E. L. Kendig, Victoria, as alternate to the Norfolk meeting of the State Society.

Loudoun County Medical Society.

At a recent meeting of this Society, Dr. John A. Gibson, Leesburg, was elected president, and Dr. W. D. Sydnor, Hamilton, secretary, for the coming year. Dr. Frank Simpson, Purcellville, was appointed to represent this Society at the State Society meeting in Norfolk.

The Norfolk County Medical Society,

After a short business session on October the 4th, held a Memorial Meeting in memory of four of its beloved members who had died this year—Drs. L. C. Shepherd, R. Lloyd Williams, L. Mendelsohn, and Burnley Lankford. Members of the Woman's Auxiliary and the families of the doctors were in attendance in addition to about one hundred doctors. Beautiful tribute was paid these doctors by Col. R. A. Marr in a paper presented by Dr. C. J. Andrews, Judge W. H. Sargeant, Rev. Louis D. Mendoza, D. D., and Mr. W. W. Old, respectively. Dr. Mendoza touched the key note of the meeting when he stated, "It is our occidental sense of reticence that keeps us from bestowing praise for their virtues upon our friends while they yet live." All of the doctors were extolled for their work in the welfare of their fellowmen and for their leadership in the community life and civic advancement.

Amelia County Medical Society.

At a recent meeting of this Society, Dr. Craig Eggleston, Amelia, was elected presi-

dent for the ensuing year, Dr. James M. Habel, Jetersville, vice-president, and Dr. G. A. Arhart, Amelia, secretary. Dr. Habel was appointed delegate and Dr. Arhart, alternate to the State Society meeting held last month.

The Northern Neck Medical Society

Held its semi-annual meeting at Kilmarnock, October 28, Dr. B. A. Middleton, of Emmerton, presiding. The attendance was good and papers were read by Drs. Frank Johns, W. Lowndes Peple, and F. W. Lewis, Jr., of Richmond. New officers elected are: President, Dr. H. J. Edmonds, Kilmarnock; vice-president, Dr. F. W. Lewis, Sr., Morattico; secretary-treasurer, Dr. M. C. Oldham, Lancaster. Following the business session, a banquet was held. The next meeting is to be held at Heathsville, in the Spring of 1927.

Miscellaneous

Symposium on Cancer Control.

The American Society for the Control of Cancer held a Symposium on Cancer Control at Lake Mohonk, N. Y., September 20-24, for the purpose of considering the prevention and cure of cancer from a practical standpoint, and to express in concise language the fundamental groundwork of fact and opinion upon which a collective effort may be made in the United States and other countries for the control of cancer. It was believed that there were many things which physicians and surgeons could agree upon, and that if these agreements could be expressed in simple, concise language the results would be of much value.

The program consisted of twenty-seven carefully prepared papers covering practically every phase of the cancer problem. These were read and discussed. Differences of opinion with regard to some of the scientific and theoretical details underlying the present conception of cancer and its causation existed, but when it came to discussing the large and important steps to be taken for the better control of the disease, the meeting was unanimous.

Two resolutions were passed, after careful consideration by a committee and discussion before the whole gathering. One was a proposition to form an international federation in order to bring about more meetings like the Mohonk symposium and publish in at least three languages an index and abstracts of all papers on cancer which appeared anywhere in the world. By resolution this proposition was referred to the many national societies against cancer, with a recommendation that the plan, or one similar to it, be adopted, if, upon further study, means could be found for deferring the cost of the work.

The second resolution was the adoption of a statement of the facts and opinions upon which campaigns against cancer should be conducted.

At a dinner to the foreign guests held in New York at the end of the symposium, and attended by about 250 physicians, Sir John Bland-Sutton declared that the meeting would make medical history. He spoke in part as follows:

"We have had a very strenuous week, and I will say in all my experiences in congresses and association meetings I have never been to one in which there was a more complete absence of acrimony and so much work was accomplished. The zeal which led so many investigators, surgeons and physicians to cross the Atlantic and come from all parts of the American Continent is creditable, and the earnestness they displayed in the conference is beyond all praise. In fact, they were so earnest in their discussions that they even continued them on the hotel porches and in the dining room. This meeting is certain to make medical history."

Dr. Wendell Phillips, President of the American Medical Association, said:

"This meeting has done much to stabilize the knowledge that we have of cancer, and it will clarify the opinions, not only of medical men, but of the public. In this respect it will accomplish what no other meeting has done before. It is a great thing to preach up the right rather than to preach down the wrong, and those who have been at Mohonk have been preaching up the right. They have not been making any attacks on individuals or institutions."

"The great note struck at the Mohonk symposium," declared Dr. Welch, "was the tremendous importance of the cancer question and the appalling problems which it presents. There was never a time when tuberculosis presented problems of such magnitude. The general public and the medical profession must be aroused to the vital importance of efforts to control cancer. However inadequate our knowledge is today, it is an obligation of the

profession to the general community that every effort be made to control this scourge. The community must be taught that all types of cancer are not certainly and inevitably fatal if they are recognized and properly treated at an early stage. Emphasis was placed upon the importance of research work, the need of further additions to our knowledge on the one hand, and equally, upon the necessity of applying our existing information for the saving of human lives and suffering. There is no disease to which larger additions have been made to our knowledge than cancer, but because this knowledge does not reach the public which we are most anxious to reach, this seems trivial. The many papers and discussions will be published, and make a volume which will be an epochal contribution to our knowledge of cancer."

Statement of the Facts and Opinions Agreed to by the International Meeting on Cancer Contol Held at Lake Mohonk, N. Y.

Although the present state of knowledge of cancer is not sufficient to permit of the formulation of such procedures for the suppression of this malady as have been successfully employed for the control of infectious diseases, there is enough well established fact and sound working opinion concerning the prevention, diagnosis and treatment of cancer to save many lives, if this information is carried properly into effect.

1. The causation of cancer is not completely understood, but it may be accepted that for all practical purposes cancer is not to be looked upon as contagious or infectious.

2. Cancer itself is not hereditary, although a certain predisposition or susceptibility to cancer is apparently transmissible through inheritance. This does not signify that, because one's parent or parents or other members of the family have suffered from cancer, cancer will necessarily appear in other persons of the same or succeeding generation.

3. The control of cancer, so far as this subject can be understood at the present time, depends upon the employment of measures of personal hygiene and certain preventive and curative measures, the success of which depends upon the intelligent co-operation of the patient and physician.

4. Persons who have cancer must apply to competent physicians at a sufficiently early stage in the disease, in order to have a fair chance of cure. This applies to all forms of cancer. In some forms early treatment affords the only possibility of cure.

5. Cancer in some parts of the body can be discovered in a very early stage, and if these cases are treated properly the prospect for a permanent cure is good.

6. The cure of cancer depends upon discovering the growth before it has done irreparable injury to a vital part of the body and before it has spread to other parts. Therefore, efforts should be made to improve the methods of diagnosis in these various locations and the treatment of the cancers so discovered.

7. The public must be taught the earliest danger signals of cancer which can be recognized by persons without a special knowledge of the subject, and induced to seek competent medical attention when any of these indications are believed to be presnet.

8. Practitioners of medicine must keep abreast of the latest advances in the knowledge of cancer in order to diagnose as many as possible of the cases of cancer which come to them.

9. Surgeons and radiologists must make constant progress in the refined methods of technic which are necessary for the diagnosis and proper treatment not only of ordinary cases but of the more obscure and difficult ones.

10. There is much that medical men can do in the prevention of cancer, in the detection of early cases, in the referring of patients to institutions and physicians who can make the proper diagnosis and apply proper treatment, when the physicians themselves are unable to accomplish these results. The more efficient the family doctor is, the more ready he is to share responsibility with a specialist.

11. Dentists can help in the control of cancer by informing themselves about the advances in the knowledge of the causes of cancer, especially with relation to the irritations produced by imperfect teeth and improperly fitting dental plates. They can also help by referring cases of cancer which they discover to physicians skilled in the treatment of cancer in this location. It may be doubted whether all dentists fully realize the help which can be obtained from X-ray photographs in revealing not only the state of the teeth but the condition of the bone surrounding them.

12. Medical students should be instructed

in cancer by the aid of actual demonstrations of cancer patients, and this to a sufficient extent to give them a good working knowledge of the subject.

13. The most reliable forms of treatment, and, in fact, the only ones thus far justified by experience and observation, depend upon surgery, radium and X-rays.

14. Emphasis should be placed upon the value of the dissemination of the definite, useful and practical knowledge about cancer, and this knowledge should not be confused nor hidden by what is merely theoretical and experimental.

15. Efforts toward the control of cancer should be made in two principal directions: (1) the promotion of research in order to increase the existing knowledge of the subject, and (2) the practical employment of the information which is at hand. Even with our present knowledge many lives could be saved which are sacrificed by unnecessary delay.

Analyses, Selections, Etc.

Plan for Promotion of Periodic Health Examinations.

Our delegates to the Dallas meeting of the American Medical Association presented a most interesting report at the Norfolk meeting (see page 531). An outstanding feature of this report was reference to President Haggard's address before the House of Delegates of the A. M. A., on "Plan for Promotion of Periodic Health Examinations." Several extracts were given, as they felt that to quote Dr. Haggard's address in full would make their report too voluminous.

As this subject is one of paramount importance and one in which every doctor should be interested, we take the liberty of quoting in full the suggestions given by Dr. Haggard, for the purpose of getting the maximum number of patients examined by a maximum number of family physicians:

"1. The House of Delegates should recommend to the thirty-four states that have not yet acted, that the manual be obtained from headquarters at cost price, together with a suitable number of examination blanks, and supplied to each individual member.

"2. The House of Delegates should recommend to the county societies that a special meeting on this subject be held at least once a year in order to popularize the plan and bring it into being.

"3. A medical society clinic emphasizing the need, value, method and technic in the conduct of health examinations, and their bearing on preclinical medicine, should be arranged by local or neighboring clinicians.

"4. A strong, active committee in each county society on periodic health examinations should supervise the inauguration and perpetuation of the health examinations.

"5. A nation-wide educational campaign should be inaugurated during 'Health Week,' or some designated period in co-operation with the existing board of health or with some local activity, such as the Anti-Tuberculosis Association, or other lay organization, to interest the civic clubs and other organizations in the great importance and benefit to be derived from this plan. Health parades with banners carried by Boy Scouts, films, large posters, and folders could be utilized, as was so successfully done by the Illinois State Medical Society.

"6. A statement in the nature of a circular letter should be prepared by the county society and sent impersonally as a statement from the county society to the clientele of the various members, calling their attention to the importance of the annual health examination and urging their acceptance of it at the hands of their physicians.

"7. Many organizations, lodges, clubs, large industrial corporations, etc., could greatly facilitate the idea by having cards mailed to their various members on their birthdays, urging the importance of the acceptance of the birthday physical examination.

"8. The medical society as such should start the campaign by having as many of the individual members as possible to undergo the examination, first, as an educational measure and, second, to imbue the individual members themselves with the importance and far reaching value of the plan. This method was employed by the Medical Society of the County of Kings. Nothing will stimulate the universal application as much as the profession themselves who so sorely need it, utilizing the idea for their own benefit as well as for the advancement of the general scheme.

"9. The press should be requested to carry articles prepared and issued by the county society, preferably unsigned, as a news article or under the signature, if desirable, of the offi-

cers of the society, explaining the importance of periodic physical examinations and the benefit to be derived by the health client.

"These recommendations are to strengthen the work already done, crystallize it and have it activated by the House of Delegates.

"No more humane, scientific and socially and economically beneficient movement for the well being of the American people could be fostered and put into nation-wide practice than the universal periodic health examination by the Amreican Medical Association."

The Truth About Medicine

In addition to the articles enumerated in our letter of August 27, the following have been accepted:

H. K. Mulford Company
- Digitos
  - Digitos Ampules, 1 c.c.
- Solution Pituitary Extract Surgical—Mulford
  - Ampules Solution Pituitary Extract Surgical—Mulford, 1 c.c.

Parke, Davis & Company
- Ovarian Substance Soluble Extract—P. D. & Co.
  - Ampules Ovarian Substance Soluble Extract—P. D. & Co., 1 c.c.

E. R. Squibb & Sons
- Ipral
  - Ipral Tablets, 2 grains

United States Radium Corp.
- Ampules Radium Chloride, 2 c.c.—United States Radium Corp. (radium element, 50 micrograms).
- Ampules Radium Chloride, 2 c.c.—United States Radium Corp. (radium element, 2 micrograms). For drinking use.

NEW AND NON-OFFICIAL REMEDIES

Erysipelas Streptococcus Antitoxin Concentrated—Squibb.—An antitoxic serum (Jour. A. M. A., Aug. 28, 1926, p. 671), prepared according to the method of K. E. Birkhaug, under license of the School of Medicine and Dentistry of the University of Rochester. It is standardized so that 1 c.c. will neutralize at least 50,000 skin test doses of a toxin furnished by the licensor. The product is marketed in syringes containing 15 c.c. E. R. Squibb & Sons, New York.

Diphtheria Antitoxin, Purified, Concentrated—Lilly.—A diphtheria antitoxin concentrated (New and Non-official Remedies, 1926, p. 330), marketed in syringe containers of, respectively, 1,000, 3,000, 5,000, 10,000 and 20,000 units each. Eli Lilly & Co., Indianapolis, Ind.

Antistreptococcic Serum—Gilliland.—An antistreptococcus serum (New and Non-official Remedies, 1926, p. 339), also marketed in 20 c.c. syringes. The Gilliland Laboratories, Inc., Marietta, Pa.

Poison Oak Extract—Lederle (In Almond Oil).—A solution in almond oil of a substance extracted from the fresh leaves of poison oak (Rhus diversiloba). It is used to relieve the symptoms of dermatitis due to contact with poison oak. The product is marketed in 1 c.c. syringes. Lederle Antitoxin Laboratories, New York. (Jour. A. M. A., Sept. 4, 1926, p. 757).

Digitos.—A preparation of water-soluble active principles of digitalis leaves, containing not more than 7 per cent of alcohol. It is standardized so that 1 c.c. is fatal to a 250 Gm. guinea-pig. The actions and uses of Digitos are the same as those of other digitalis preparations. It is suited for hypodermic, intramuscular and intravenous administration, but is not adapted for oral administration. Digitos is also marketed in 1 c.c. ampules. H. K. Mulford Co., Philadelphia.

Solution Pituitary Extract Surgical—Mulford. A slightly acid aqueous solution containing the water-soluble principle or principles of the fresh posterior lobe of the pituitary body of cattle. It has twice the strength of solution of pituitary—U. S. P. X. The actions, uses nad dosage of solution of pituitary are discussed in New and Non-official Remedies, 1926, pp. 281-283. The product is supplied in 1 c.c. ampules. H. K. Mulford Co., Philadelphia. (Jour. A. M. A., Sept. 25, 1926, p. 1037).

PROPAGANDA FOR REFORM

o-Iodoxybenzoic Acid in the Treatmest of Infectious Arthritis.—The Council on Pharmacy and Chemistry publishes a preliminary report on the treatment of infectious arthritis reported on by Drs. Young and Youmans. The authors report that they have treated forty-three cases of chronic arthritis of various types with o-iodoxybenzoic acid and had obtained marked improvement in 50 per cent and moderate improvement in 29 per cent. In some cases sodium iodoxybenzoate was used; in others ammonium iodoxybenzoate, prepared extemporaneously. The Council states that the results of further clinical trials must be awaited before a final evaluation of this method of treatment can be made. The drug is not commercially available at present. The A. M. A. Chemical Laboratory is prepared to examine salts of o-iodoxybenzoic acid when they are placed on the market. (Jour. A. M. A., Sept. 4, 1926, p. 757).

Rad-X-Solution A and Rad-X-Solution B Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that "Rad-X-Solution A" and "Rad-X-Solution B," marketed by Robert McKnight, are stated to be "radioactive solutions," which are prepared from "pitchblende or ore carrying radioactive ingredients of similar character and quantity." A gamma ray test, made with a very sensitive electroscope, of the specimens which the Council received from Robert McKnight, showed no signs of radioactivity in either sample. The Council found Rad-X-Solution A and Rad-X-Solution B inadmissible to New and Non-official Remedies because they are preparations of indefinite and uncontrolled composition, because they are advertised indirectly to the public, because the claims are unwarranted, and because they are marketed under non-informing names. (Jour. A. M. A., Sept. 4, 1926, p. 775).

More Misbranded Nostrums.—The following "patent medicines" have been the subject of prosecution by the authorities charged with the enforcement of the Federal Food and Drugs Act: Vita Rica Tonic Pills and Laxative (Vita Rica Pharmacal Co.), pills containing compounds of iron, potassium, manganese, mercury, arsenic, zinc, phosphorus and strychnine. King's Formula (William C. King), a liquid in two layers, composed of ether, alcohol, iodine, eucalyptus oil, water and formaldehyde. Kolide (Kolide Laboratories, Inc.), tablets composed of starch, sugar, gum and iodine (approximately 1-5 grain per tablet). Lithadonis (American Apothecaries Co.), tablets containing compounds of lithium and iodine, salicylate, caffeine and a material derived from plant drugs, including laxative. Lippi Blood Purifier Tonic (A. F. Lippi Laboratories), consisting essentially of compounds of iron, arsenic, strychnine, potassium and iodine, with extracts from plant drugs, including a laxative, alcohol, sugar, flavoring and water. (Jour. A. M. A., Sept. 4, 1926, p. 776).

Virginia Medical Monthly

FOUNDED BY LANDON B. EDWARDS, M. D., APRIL, 1874.
OWNED BY THE MEDICAL SOCIETY OF VIRGINIA.
PUBLISHED BY THE PUBLISHING COMMITTEE.

A. G. BROWN, Jr., M. D., Chairman, Richmond, Va.
B. R. TUCKER, M. D., Richmond, Va.
P. W. HOWLE, M. D., Richmond, Va.
E. L. KENDIG, M. D. Victoria, Va.
A. L. GRAY, M. D., Richmond, Va.

ALEX. G. BROWN, Jr., M. D.,
Editor.

AGNES V. EDWARDS,
Business Manager and Secretary-Treasurer.

All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $2.00 per annum in advance.
Single Copies 20c.

VOL. 53. NOVEMBER, 1926 No. 8

Editorial

Pulsus Alternans.

Physical diagnosis rightfully holds foremost position in medical minds of all special and general practitioners. Especially in these times when aids to diagnosis are so largely employed with instruments of precision, and with methods of laboratory examination, is the need for cultivation of the art of physical diagnosis important. In no field of medicine, furthermore, is physical diagnosis more fruitful of good results than that of cardiology. In no wise disparaging or reflecting upon the use of electrocardiographic and sphygmographic study of heart and pulse, one may yet affirm that physical diagnosis of heart conditions is more essential today than ever. This has been brought about by the discovery of new phases of the subject disclosed in physiologic and pathologic behavior of the heart by the employment of the electrocardiograph and the polygraph.

This is illustrated quite well in the instance of pulsus alternans. For many years clinicians have held that this condition is rare and extremely ominous. But electrocardiographic studies show that pulsus alternans occurs much more frequently than it was thought to have occurred. Now that it is known to take place so frequently, as demonstrated in electrocardiograms, physical examination of pulse and heart reveals its presence in cases in which, heretofore, it had been unrecognized. While pulsus alternans has been known and observed by the heart examiners since 1872, it has been considered to be a rare but deadly phase of heart action, as above stated.

Morris* draws attention to the subject and states that White was the first to note the fact that it was relatively common and speaks of it as a common clinical condition.

This sign of heart failure has a prognostic value of considerable worth to one engaged in the management of the crippled heart. The early discovery by physical examination now enables one to take measures to retard the stumbling heart on its way to its final fall. The recognition of pulsus alternans further enables the physician to warn the family and friends of the fatal prospect. This at once prepares them for sudden death, or it may delay that event.

The significance of pulsus alternans in cardiac disease is not easy to explain. Its interpretation rests upon undetermined factors. Some hold to the hypothesis of hemisystole in which the weak systole is due to the single contraction of the right ventricle and the strong beat is due to the combined contraction of both ventricles. Some think it due to "a periodic insufficiency of the papillary system." Some have the opinion that it results from a mere weak contraction followed by a strong contraction. Some hold that portions of the ventricle are capable of responding to one out of every other stimulation. Following each contraction, it is held, the fibers of the heart muscle become refactory for a period, but, normally by the time for the next systole these fibers recover and readily and fully respond to the next normal excitation. In disease of muscle fibers alternating phenomona occur because of the inability of fibers to fully return to normal excitability on time. This subject is interestingly treated by Vaquez in his recent work on the heart. This condition is often overlooked because the signs are not always patent. Some physicians feel that tracings of the pulse are needed to detect it. But one may employ Mackenzie's suggestion in looking for it, when taking blood pressure. The differences of systolic blood pressure readings between the large and small pulses is rather easy. The pitch of the heart sounds, in pulsus alternans, varies as does the pitch of cardiac murmur.

*J. A. M. A., Vol. 87, No. 7, page 463.

Iritis and Focal Infection.

It is safe to say that iritis is nearly always caused by infection remote from the eye. One seems to get this reaction in reading a group of papers, with discussion following, which were presented before the section on Ophthalmology at the seventy-seventh session of the American Medical Association.* The recognition and agreement that iritis is caused even in the large percentage of cases by a previous infection located elsewhere in the body is a conclusion of moment. The relationship between cause and effect, in iritis cases, fixes quite directly a responsibility of search throughout the body in order that the primary cause may be unearthed. The discovery and eradication of the first causal factor in disease is the first real step toward accomplishing a cure. Clinicians have long since agreed upon the fact of such a relationship in arthritis. Especially in gonorrheal arthritis is there a clear cut parallel between primary urethral infection and secondary joint involvement, called, gonorrheal rheumatism. Not only in specific, but also in non-specific arthritis primary infection is suspected and usually found in remote depots of the body: notably, tonsils and teeth, and accessory sinuses, gall-bladder and gall-tract, pelvis of kidney and the prostate.

To repeat, it augurs well for the acceptance of this important "principle" in the domain of disease, to note that a foremost body of medical specialists agrees, if the trend of the papers and the discussion of them may be taken as a criterion of the sentiment of the body, to the fact that iritis is nearly always caused by focal infection. But one must observe that the term "focal infection," as used in this connection, must be extended to cover more than is usually understood by this term. This includes focal infections of tonsils and teeth, accessory sinuses, gall-bladder and gall-tract, prostatitis, syphilis, and tuberculosis and others. It would seem that cases of iritis call for a very thorough physical examination in institution of an adequate search for the real cause. It affords a striking opportunity for the association of the internist with the specialist in the treatment of a malady which calls for skill and effort in each of these and other special workers.

Under the title, "Recurrence of Iritis as Influenced by the Removal of Infections," Irons and Brown* basing their paper on a study of fifty cases and previously reported work, gave an interesting paper on this subject. These authors in 1916 and 1923 reported two series of 100 cases of "iritis." In these cases what was taken to be primary infection, as far as possible, was moved. After a period of three to twelve years, they present a summary of the first fifty cases reporting with "reference to recurrence."

In forty-three of the fifty patients, iritis did not recur during an average period of seven years. It should be noted too that in twenty-three of these forty-three patients there had been previous attacks.

A glance at the table shows that the etiology of two was syphilis, of three was tuberculosis, of ten was dental infection, of seventeen was tonsil infection, and that the remainder were caused by genito-urinary infection, and a combination of the foregoing diseases. In two of the cases the cause of iritis was undetermined. It seems that a period of three to twelve years is a fair period to form an opinion of the accuracy of a conclusion; especially when 50 per cent of these observed cases had had attacks before the one in which the removal of primary focus was practiced.

But in seven of the fifty patients there were recurrences although primary infection was thought to have been removed. However, in four patients the infection was not removed owing to several reasons explained by the authors. In the fifth case there was generalized infection; in the sixth case there was tuberculosis of the lungs; in the seventh case there was some doubt as to diagnosis.

Functional Heart Tests.

It is well known that we have not means by which to test functional power of the heart. For many years clinicians have proposed various methods and procedures but in each proposed test there have been found defects and faults. It is quite natural too, that this should be so. The heart function depends upon numerous factors. The four chambers of the heart may be entirely unlike in normality and in disorder. The resistance to the flow of blood, the periphery, the state of disease of the viscus, and the nature of the blood itself, are but a few of the factors which may

*J. A. M. A., Vol. 87, No. 15, page 1167.

*J. A. M. A., Vol. 87, No. 15, page 1167.

affect the heart function and hence may interfere with a proper testing of the myocardium itself.

In fact, after considering the various proposed tests by exercise, by blood pressure readings, by polygraph and electrocardiograph and radioscopy, one is forced to say that the best test of heart function in any given heart is more reliably determined by a general physical examination of not only the heart itself, but also the body in general. Experience and daily contact with diseased hearts by methods of physical diagnosis enable one to arrive at a judgment of heart function in the most favorable manner.

One cannot say what are the lines of heart symptoms and signs one relies upon to reach a conclusion of judgment on heart function. Every cardiopath probably receives a rating, mental if not recorded, of the heart function under investigation. This rating may be arrived at quickly or very slowly. One's judgment in diagnosis and prognosis varies much with the nature of the problem presented, whether a quick or slow opinion is formed. The examination of heart by general methods of physical diagnosis probably gives as true a method for testing of heart functions as any.

J. SHELTON HORSLEY, M. D.,
President, Medical Society of Virginia.

One test applied has been related to pulse counting. Staehelin, cites Vaques, used a method which consisted in counting the pulse rate before and after walking. Herz practiced testing heart function by noting changes in the pulse rate by flexion of the forearm. Mendelsohn based a test of heart function on the duration of the acceleration of the pulse brought on by exertion. The method of testing the heart some clinicians use is to have the patient hop on one foot for thirty times and then on the other foot for thirty times, then after two minutes count the pulse. If the rate has returned at the end of two minutes to normal, the myocardium is given a "good-bill-of-health" on function. At once it is easy to see that these methods are inaccurate and inadequate.

The graphic tracing of the jugular vein and the heart may give an idea of the co-ordinating function of the heart, which in turn may intimate something of myocardial function and strength. Likewise, electrocardiographic examination of the heart reveals function in the auricles and ventricles. Fluroscopic examination of the heart also gives one another method of reaching an estimation of heart function.

A. G. B., JR.

Our New President.

A man is sometimes elected to an office by means of a successful political campaign, sometimes by the partial favoritism of his friends, and sometimes because of his outstanding merit. It is for this latter reason that Dr. Horsley was recently unanimously elected at Norfolk to the position of President of the Medical Society of Virginia and his selection is therefore a tribute to his high personal character, his unusual

professional achievements and his regular attendance and able contributions to the meetings of the State Association.

Dr. Horsley was born in Lovingston, Virginia, November 24, 1870, and came of old Virginia stock, his ancestors having lived in the State for more than two hundred years. His father, John Horsley, was a student at the Virginia Military Institute and fought with the cadets at New Market. After Hunter burned the Institute he served under Mosby for the remainder of the war.

Dr. Horsley's mother was Rose Evelyn Shelton, daughter of Dr. John Mosby Shelton, of Nelson County, Virginia.

Dr. Horsley attended the public schools in Nelson County, and later went to the University of Virginia where he first took an academic course and then matriculated in the Medical Department from which he received the degree of Doctor of Medicine in 1892.

After graduating at the University of Virginia, Dr. Horsley took a short post-graduate course in New York and then returned to Virginia, practicing his profession first at Lowesville and then at Staunton.

At this early period of his career he gave evidence of his surgical ability and the report he wrote of an operation of hip joint amputation he performed on a colored patient attracted the attention of John A. Wyeth, of New York, who after some correspondence, offered him a position as one of his assistants.

Dr. Horsley went to New York in 1896 and practiced with Dr. Wyeth for two years, but owing to an attack of typhoid fever and broncho-pneumonia he thought it best, on account of his health, to seek a milder climate and therefore moved to El Paso, Texas, where he remained for five years.

Dr. Horsley in 1903 was elected Professor of Principles of Surgery in the Medical College of Virginia and came to Richmond where he has since made his permanent home.

In 1899 Dr. Horsley married Eliza Williamson Braxton, of Chericoke, King William County, Va., who was living at that time with her mother and her brother, Caperton Braxton, at Staunton. To them eight children were born. The elder son is a graduate of the Harvard Medical School, and for the last two years has served as his father's surgical assistant.

Dr. Horsley is an indefatigable worker, and by system and concentration has accomplished much in many varied lines of endeavor. He is a practical surgeon of wide reputation and his private hospital, which he built in 1912, is kept well filled with patients many of whom come from distant states.

He is a scientific investigator and his experiments on blood vessel surgery and intestinal anastomosis, as well as his study of cancer, are well known to the profession. He was awarded a Gold Medal by the Southern Medical Association in 1916 for his original research work.

Dr. Horsley is a clear and forceful writer, and his literary productions have been enhanced in value by the beautiful illustrations of Helen Lorraine whom he employs as his artist. Besides many contributions to medical journals he is the author of "Surgery of the Blood Vessels" published in 1916. "Operative Surgery" first published in 1921 and now in its second edition, and "Surgery of the Stomach and Small Intestines," published by Appleton in 1926.

Dr. Horsley is a regular attendant and active worker not only in local but also in National Medical Associations. He has been President of the Richmond Academy of Medicine and of the Richmond Surgical Society, the Chairman of the Surgical Section of the Southern Medical Association and of the Council on Scientific Assembly of the American Medical Association, and this year is President of the Virginia Academy of Science. He was elected a member of the Phi Beta Kappa Fraternity in 1915 and of the Alpha Omega Alpha Fraternity in 1922 by the University of Virginia.

In honoring Dr. Horsley by electing him its President, the Medical Society of Virginia has honored itself, for his name and reputation will add prestige to the Society and his spirit of scientific enthusiasm will doubtless be reflected in the work of the Association during the coming year.

S. McG.

News Notes

The Norfolk Meeting

Of the Medical Society of Virginia is now a pleasant memory for our members and the ladies who were fortunate enough to attend. There was a registered attendance of nearly four hundred and fifty doctors—about twenty-

five per cent of our membership and a good proportion in comparison with attendance at other State associations—and about one hundred visiting ladies in addition to those residing in Norfolk. If our membership could realize how much is to be gotten from these meetings in the way of good fellowship as well as scientific interest, we believe there would be an increase in attendance each year.

The Norfolk people "did themselves proud" as usual in the way of entertainment and every body had a good time. On Wednesday evening of the meeting, the president of the Society, Dr. W. L. Harris, of Norfolk, gave a reception and dance to the invited guests, members and their wives and daughters, at the Country Club, and on Thursday, the Norfolk County Medical Society gave an elaborate oyster roast at Cape Henry, which was attended by more than four hundred. In addition to these entertainments, Mrs. Southgate Leigh gave a lovely buffet luncheon for the ladies on Wednesday, and this was followed by a boat trip to the Naval Hospital and Navy Yard, at which place there was an informal reception and dancing. On Thursday evening, the ladies were taken to the theatre while their husbands were attending the scientific meeting. The Woman's Auxiliary held an interesting meeting on Wednesday morning, which will be reported in the next issue of the MONTHLY.

Invited guests at this meeting were Dr. Walter A. Wells, of Washington, D. C., Dr. Olin West, secretary-manager of the American Medical Association, Chicago, Dr. Frank C. Mann, Rochester, Minn., and Dr. Roger H. Dennett, prominent pediatrician of New York City.

The regular golf tournament was held on the opening day, on the links of the Norfolk Country Club. Dr. R. M. Cox, of Portsmouth, won the cup donated several years ago by the Roanoke Academy of Medicine, and Dr. J. R. Bagby, Newport News, won the cup offered this year by the Norfolk-Portsmouth Chamber of Commerce for the best gross score.

Dr. J. Shelton Horsley, Richmond, was elected president, while the time and place of the next annual meeting will be selected by the Executive Council at its mid-winter meeting.

The Association of Surgeons of the Norfolk and Western Railway

Held its annual meeting in Washington, D. C., under the presidency of Dr. Beverley R. Tucker, of Richmond, Va. The doctors and members of their families were guests of the Railway Company while there, and many side trips to places of interest were enjoyed by those in attendance. President Coolidge gave a reception at the White House to the doctors and their families. Dr. Herbert R. Drewry, Norfolk, Va., was elected president for the coming year; Drs. W. H. St. Clair, Bluefield, W. Va., and J. M. Shackelford, Martinsville, Va., vice-presidents; and Dr. T. D. Armistead, Roanoke, Va., was re-elected secretary. Atlantic City, N. J., was selected as the 1927 place of meeting.

Dr. Frank C. Mann,

Of the Mayo Foundation, Rochester, Minn., addressed the students and faculty of the Medical College of Virginia, on October 14th, the day following his address before the Medical Society of Virginia.

Dr. Brown Resigns Professorship.

After teaching for twenty-five years, Dr. Alexander G. Brown, Jr., of Richmond, has resigned from the faculty of the Medical College of Virginia. Dr. Brown was professor of Practice of Medicine in the University College of Medicine and associate professor of Medicine in the Medical College of Virginia during this period. Dr. Brown's resignation was accepted by the Board of Trustees with expressions of regret. The obligations of his private practice were given as reasons for the resignation.

It is understood that Dr. Brown will devote his entire time to the practice of internal medicine and will retain his connection as an internist upon the staff of Stuart Circle Hospital, this city, in order to accommodate his private patients.

Dr. Joseph T. Graham

Has resigned as a member of the medical staff of McGuire Clinic, Richmond, Va., for the purpose of taking charge of internal medicine in a large clinic in one of the Southern states.

Dr. Glenn C. Campbell,

Formerly of Brownsburg, Va., is now located at Morristown, Tenn., where he is continuing the practice of medicine.

Automobile Fatalities.

A report issued by the Department of Commerce announces that there were 4,162 deaths reported from automobile accidents from January 3 to September 11, 1926, in seventy-three

of the principal cities of the United States, with an aggregate population of 31,878,016, or an average of over sixteen deaths a day. This is equivalent to an annual death rate of 18.9 per 100,000 population. There was considerable variation in the number of deaths from month to month, the minimum number for one month in these seventy-three cities being 347, and the maximum number 560.

Some of the deaths were due to accidents which occurred outside the corporate limits of the cities. Of the two Virginia cities on which reports are made, all twelve of the deaths reported in Norfolk were from accidents occurring within the city; only fourteen of the twenty-five deaths in Richmond were from accidents within the city.

Dr. George W. Parson,

Who has been practicing at Raven, Va., for the past four years, has left with his wife for Rochester, Minn., where he has a Fellowship in Medicine in the Mayo Foundation.

Special Demonstrations for Health Officers at Southern Medical Association.

Dr. Roy K. Flannagan, Chairman of the Public Health Section of the Southern Medical Association, which meets in Atlanta on November 15-18, says that the Georgia State Board of Health and the Atlanta Health Department have prepared special health demonstrations for visiting health officers, at the meeting, the program committee having arranged the session of the sections so that there will be no conflict with the rest of the program. The subjects on the program of the Public Health Section are of an exceedingly practical nature.

It may also be said with truth that the whole program of the Association measures up to the highest of any previous year. Virginia should have a large representation of physicians at the Atlanta meeting.

Dr. Roy K. Flannagan, assistant State Health Commissioner, Dr. H. G. Grant, State epidemiologist, and Dr. William R. Culbertson, health officer of Wise County, are the Virginia doctors on the program of the Public Health Section of the meeting in Atlanta, November 15-18.

Dr. J. L. Early,

Who recently resigned as head of the medical staff of the Mathieson Hospital, at Saltville, Va., has located in Radford, Va., for the private practice of medicine.

Married.

Dr. J. Churchill Robertson, Salem, Va., and Miss Margaret Booth Heindl, of Richmond, Va., October 20.

Dr. John Butler Faison, Manasquan, N. J., of the class of '25, University of Virginia, at which time he was appointed an intern at University Hospital, and Miss Mary Elizabeth Murphy, of Clarke County, Va., and Washington, D. C., October 23.

Dr. Ernest Malcolm Wilkinson, Welch, W. Va., and Miss Addie May Johnson, Parksley, Va., October 30. Dr. Wilkinson is an alumnus of the Medical College of Virginia, having graduated from that school in 1923.

Dr. T. Duckett Jones,

Son of Dr. J. Bolling Jones, of Petersburg, Va., and an alumnus of the University of Virginia in the class of '23, after completing a service at the Massachusetts General Hospital, Boston, returned to the University of Virginia at the beginning of this session, and, for the next year, will be on the staff of Internal Medicine. In this connection, he will have charge of the cardiographic machine.

Is Intelligence Inherited?

The "old conclusion that the highest intelligence comes out of stock that is highly developed on both sides" is reached by Grace Allen in a recent study, made for the Eugenics Record Office of the Carnegie Institution, of the families of a group of forty-nine children showing a high intelligence quotient. The study was undertaken to aid in discovering how far superior intelligence is a family characteristic, and covered race and nationality, age, occupation and education of the parents, rating of the homes, neighborhood conditions, mental status in the families, and fecundity and sex rates.

Dr. William W. Rixey,

Of the class of '18, University of Virginia Medical School, recently located in Richmond, with offices in Professional Building. His work is confined to rectal surgery.

Dr. Robley R. Goad,

Of the class of '25, Medical College of Virginia, is taking special work in ophthalmology at the University Hospital, Iowa City, Iowa.

Dr. B. A. Rice,

Forest Depot, Va., is home again after a visit to New York and Washington, D. C.

Changes at Memorial Hospital, Richmond.

After twelve years of faithful service, Mr.

Frederic B. Morlok recently tendered his resignation as superintendent of the Memorial, Dooley and St. Philip Hospitals of the Medical College of Virginia, effective November 1. In recognition of his efficient service, the college presented him with a handsome silver service, shortly before his departure. During Mr. Morlok's administration, the Dooley and St. Philip Hospitals have been erected, there has been an increase in total current revenue from $80,000 to $258,000 and in value of hospital properties and equipment from $200,000 to $700,000, and an increase in the number of professional and non-professional employees from 113 to 242. Mr. Morlok will take a six months' vacation, motoring to California by easy stages and will visit many of the medical schools and general hospitals in large cities on the way. At the end of his vacation, he will again take up hospital work.

Dr. M. B. Jarman, who graduated from Medical College of Virginia in 1925 and has since been resident surgeon at Memorial Hospital, has been made director of the hospitals and the out-patient clinic. Mr. J. R. McCauley, secretary-treasurer of the Medical College of Virginia, will have charge of all matters pertaining to the repair and unkeep of the buildings and the finances of the hospitals, the two thus dividing the strictly professional and financial affairs.

Dr. R. W. Vaughan,

Richmond, Va., has been elected commander of Post 38, American Legion, to complete the term of the former commander who resigned as he was leaving the city.

Mount Regis Sanatorium Erecting Two Additional Buildings.

Mount Regis Sanatorium is erecting two new private cottages, which, when completed, will offer private accommodations for eight additional patients. They are of stucco construction trimmed in brick and will add greatly to the attraction of the Institution which will then consist of eight separate buildings.

These cottages will have every modern convenience, and are considered the last word in the cottage type of sanatorium construction. Every type of accommodation will then be available from the community porch plan or the private room and porch, to an entire private cottage with sitting room, dressing room, bath and sleeping porch.

Additional driveways and walks are to be completed and an effort will be made to further beautify the grounds.

R. A. Figgatt, of Roanoke, has the contract for the buildings and hopes to have them ready for occupancy within a few weeks.

Notes From State Board of Health.

Dr. John M. Bailey, recently of Amonate, Va., is now health officer of Brunswick County, with headquarters at Lawrenceville, Va. He succeeds Dr. L. H. Lewis, who recently resigned to take up county health work at Kingswood, West Virginia.

A joint health department composed of Southampton and Sussex Counties was organized under State Board of Health auspices on October 1st, with Dr. A. L. McLean as health officer. His headquarters are at Courtland, Va.

Dr. D. H. Anderson is now attached to the State Board of Health in Richmond, Va., as assistant epidemiologist.

Dr. H. W. Decker,

Richmond, Va., addressed the Industrial Committee of the Richmond League of Women Voters, early this month, his subject being "Industrial Hygiene in Virginia."

The Seaboard Medical Association of Virginia and North Carolina

Is to hold its annual meeting at New Bern, N. C., December 7, 8 and 9, 1926. This Association has interesting meetings and is always well attended. An excellent program is being arranged. Dr. George A. Caton, New Bern, N. C., is president, and Dr. Clarence Porter Jones, Newport News, Va., secretary.

Dr. Miller Succeeds Dr. James.

Dr. E. Howe Miller has been appointed surgeon for the Danville and Western Railway Company, at Danville, Va., succeeding Dr. R. Bruce James, now post surgeon at Virginia Military Institute, Laxington, Va.

Dr. G. Foard McGinnis,

Health officer of Isle of Wight County, with headquarters at Smithfield, Va., is now in Baltimore, on leave under scholarship, taking a course in the Johns Hopkins School of Public Health. Dr. McGinnis is an alumnus of the University of Virginia, in the class of '25.

Dr. G. H. Warren, of the class of '25, Medical College of Virginia, is carrying on the health work in Isle of Wight during Dr. Ginnis' absence.

Dr. R. F. Thornhill,

Of the staff of the Pulaski (Va.) Hospital, returned to his home the first of October, after several weeks spent in post-graduate study in New York.

The Elizabeth City (N. C.) Hospital

Was formally re-opened early in October, after several weeks in renovating, getting a new force of nurses and new equipment. Drs. John Saliba and M. S. Bulla are to be the surgeons in charge, with a complete corps of physicians for non-operative cases.

Dr. W. A. Shepherd,

Richmond, has been elected chairman of the Medical Staff of the Hospital Division of the Medical College of Virginia, for the ensuing year. Dr. J. L. Tabb is vice-chairman and Dr. J. G. Lyerly secretary. At these meetings, there are discussions with regard to the patients under treatment and also any unusual cases which may have occurred in any of the College hospitals during the preceding month.

Dr. J. B. Harvie Waring,

Blanchester, Ohio, has opened offices in Suite 3, Egan Building, Wilmington, Ohio, where he limits his practice to eye, ear, nose and throat, and physiotherapy.

Dr. Edward Sandidge,

Amherst, Va., recently spent a short time with some friends on a fishing trip in North Carolina.

U. S. Civil Service Examinations.

The U. S. Civil Service Commission, Washington, D. C., announces open competitive examinations for the following, applications to be rated as received until December 30th:

Medical interne (psychiatric);

Junior medical officer, assistant medical officer, associate medical officer, medical officer, and senior medical officer;

Graduate nurse and graduate nurse (visiting duty).

The Commission states that there is also a vacancy in a position of specialist in pathology at the Veterans' Bureau Hospital, Knoxville, Iowa, and that applications are being received for the place, the entrance salary of which is $3,800 a year.

Dr. I. K. Briggs

Has returned to his home in South Boston, Va., after attending the Kiwanis convention in Roanoke, Va.

Dr. W. B. Richardson,

For several years at Arvonia, Va., expects to leave that place the middle of November for Heathsville, Va., where he will be located for the practice of medicine.

Dr. Porter to Return to Richmond.

Dr. William B. Porter, formerly of this city, but for the last few years a member of the staff of the Lewis-Gale Hospital, Roanoke, Va., has been employed as whole-time professor of medicine at the Medical College of Virginia, his work in the College to begin next summer. He expects to leave Roanoke early in the coming year, however, and will study educational procedure in leading American and European universities and will take an intensive couse abroad in cardio-vascular and metabolic diseases.

Dr. E. G. Hill,

Richmond, Va., was appointed coroner of South Richmond, November the 1st, to fill the vacancy caused by the death of Dr. John W. Brodnax, who held this position for thirty-four years.

Officers in the American Legion.

The Petersburg (Va.) Post of the American Legion, at its meeting last month, re-elected Dr. L. S. Early of that city commander. Dr. E. J. Nixon was elected a member of the executive committee.

"Every Diphtheria Death is Due to Neglect."

This statement is made by the State Board of Health in a bulletin just issued, in which it is further announced that there are more cases of diphtheria than usual, this year, and that the disease is widely spread in Virginia. As toxin-antitoxin is as much a preventive for diphtheria as vaccination for smallpox, every child is entitled to this protection from that dread scourge—diphtheria. The immunization takes some months to become effective, and, for that reason, the toxin-antitoxin is best given in the spring so as to be effective with the opening of the school season. In view of the number of cases beieng reported throughout the State, however, it would not be amiss to give this protection to all children possible even at this time.

The American Public Health Association

Held its fifty-fifth annual meeting at Buffalo, N. Y., October 11th to 15th. Dr. W. A. Plecker, Dr. H. G. Grant, Dr. W. B. Foster, Mr. A. H. Straus, of Richmond, and Mr. H. L. Freese, of Norton, attended the meeting.

Unfortunately, a conflict in dates with the Medical Society of Virginia, prevented several of our public health officials from getting to Buffalo, and also those who went to Buffalo were prevented from attending the meeting in Norfolk. The meeting of the A. P. H. A. was unusually well attended and one of the most interesting in some years.

The report of Dr. Haven Emerson, Chairman of the Committee on Communicable Diseases, was of special interest. This report will shortly be published by the *U. S. Public Service*, and furnishes a most interesting compendium of our present knowlege of the communicable diseases.

A paper was given by Dr. W. A. Plecker, on "Importance to the Child of Accurate Birth Registration" before the Vital Statistic section, and one by Mr. Aubrey H. Straus before the Laboratory section, on "The Distribution of Enteric Infections in Virginia."

Dr. Charles V. Chapin, Providence, R. I., was elected president for the coming year.

Two Virginia Doctors Honored.

Drs. S. S. Gale, of Roanoke, and Everett E. Watson, of Salem, have just been elected to active membership in the American Society for Thoracic Surgery, the active membership of which is limited to one hundred.

Dr. A. M. Showalter,

Christiansburg, Va., has been elected a member of the board of directors of the Chamber of Commerce, recently organized in that place.

Dr. Paul Redd,

Yorktown, Va., who has been quite sick, is out again and has been visiting friends in Richmond while recuperating.

An Aid to the Medical Practitioner.

Physicians treating venereal disease cases have frequently expressed a need for a pamphlet containing instructions and advice to be given to venereal disease patients. Due to the nature of these diseases and the regimen which proper treatment requires, the need for such a publication has long been apparent. Some time ago the U. S. Public Health Service prepared a pamphlet known as "Important Confidential Information" expressly for this purpose. The leaflet is in two parts, one dealing with Gonorrhea and the other with Syphilis. Advice is given among other points on the following: Importance of continuing treatment until cured, proper diet while under treatment, proper care to prevent the spread of the disease, the futility and danger of quacks and self-treatment, sex conduct and marriage.

Many physicians have found this publication a valuable aid in securing the co-operation of the patient while under treatment and also as an aid in holding the patient until cured or rendered non-infectious. Copies of this publication are available from most State Departments of Health or they may be secured by writing to the U. S. Public Health Service, Washington, D. C.

Dr. John A. Gibson,

Leesburg, Va., has been appointed coroner for Loudoun County, Va., to succeed the late Dr. William C. Orr.

Georgia to Have Physician Governor.

By virtue of his nomination as governor, it is announced that Dr. Lamartine G. Hardman, of Commerce, will become governor of Georgia next June. In this event, he will be Georgia's first physician governor. Dr. Hardman has practiced his profession in that State for a number of years, and has always taken a prominent place in the political, business and medical life of the State.

Portrait Presented Epileptic Colony.

At a recent meeting of the board of directors of the State hospitals, a portrait of the late Dr. A. S. Priddy, first superintendent of the State Colony for Epileptics and Feebleminded, near Lynchburg, Va., was presented to the board.

Pan-American Child Congress.

The fifth Pan-American Child Congress will be held in Havana, Cuba, next February and will include an international child-welfare exposition. The Government of the United States has been invited to participate. The Congress will be divided into six sections, medicine, hygiene, sociology, education, psychology, and legislation.

"Trembles" and "Milk Sickness."

The close relation between the disease known as "trembles" in cattle and "milk sickness" of persons has been the subject of scientific investigation for many years. A recent outbreak of the disease in Illinois caused the death of fifteen persons. The outbreak is a repetition of many similar ones throughout the country and recalls heavy death losses among early pioneers from a mysterious disease.

Recent experiments by Dr. James F. Couch, of the Bureau of Animal Industry, supplementing those of other investigators, show con-

clusively that poisonous plants cause trembles in animals, that animals also may be poisoned without showing symptoms of trembles, and that milk and butter from cows so poisoned are dangerous to the consuming public. In the East and Central West the poisonous plant is the richweed, also known as white snakeroot. In Texas and New Mexico, where the animal malady is called "alkali disease," the poisonous plant is the rayless goldenrod.

As there usually follows a long period of illness and reduced vitality, even when milk sickness is not fatal to man, stock owners are advised to combat the poisonous plants mentioned by pulling or digging them up wherever found. Especially during the fall animals also should be kept out of pastures infested with the poisonous plants.

As a further means of combating milk sickness and diagnosing suspected cases, Dr. Couch has developed a laboratory test for tremetol. Directions for making the test will be furnished on application to the Pathological Division of the Bureau of Animal Industry, United States Department of Agriculture, Washington, D. C.

Dr. and Mrs. T. E. Armstrong,

Of City Point, Va., celebrated their silver wedding anniversary on October the 30th, with a Halloween dance and reception at the Du-Pont Club, in that place.

Dr. and Mrs. James Morrison,

Lynchburg, Va., are home again after a visit to friends in Winchester, Va.

Dr. Frank B. West,

Of the class of '26, Medical College of Virginia, after a service at Hygeia Hospital, Richmond, is now located at Laurel Fork, Va.

A Successful Business.

An undeniably successful venture in public service is the Christmas seal sale which is held annually throughout the country and which is again before us. Like all big business enterprises, its growth is due to the commonly prescribed rules for success; namely, vision, hard work, thrift, and giving the public what it wants.

Within twenty years this undertaking, which is the chief support of the national, state and local tuberculosis associations of the United States, has developed from a $3,000 business to one whose gross receipts in 1925 were approximately $4,900,000. From a tiny hospital for tuberculous patients in Delaware which was financed by the first $3,000 in 1907, it has become the means for creating a network of sanatoria, hospitals, open air schools, clinics, and other public health activities that protect the American people against what was once known as the Great White Plague.

According to the National Tuberculosis Association, the mother of this gigantic movement, the Christmas seal sale finances approximately 1,500 state and local organizations besides the National Association. The united efforts of these have resulted in the establishment of 700 sanatoria and hospitals, with nearly 70,000 beds for tuberculous patients; more than 1,000 open air schools; nearly 12,000 public health nurses ;and over 600 clinics. In addition, children's camps and preventoria, nutrition classes and numerous special campaigns such as Baby Weeks, Anti-spitting and Open Window campaigns are made possible by these little penny stickers.

All but 5 per cent of seal sale money is spent in the communities where it is raised. The 5 per cent goes to the national body which acts as a clearing house for information, supplies, leadership, research and expert service for its affiliated organizations, and for the other allied institutions and agencies.

Altogether, the record of the tuberculosis Christmas seal inspires the confidence and continued patronage of its millions of supporters.

Dr. and Mrs. Adrian Baldwin

Celebrated the forty-sixth anniversary of their marriage at their home at North Fork, Va., on October 27th.

N. C. State Health Officer.

Dr. Charles O. H. Laughinghouse, Greenville, N. C., the newly eleected State Health Officer of North Carolina, entered upon his duties in Raleigh on October 1st.

The South Piedmont Medical Society

Is to hold its regular semi-annual meeting in South Boston, Va., November 16th, under the presidency of Dr. E. Howe Miller, of Danville. Dr. G. A. Stover, South Boston, is secretary-treasurer. An interesting program to include a symposium on "Diseases of Childhood" has been arranged. Those to discuss this subject will be Drs. Dwight Rivers, D. P. Peters and Bernard H. Kyle, of Lynchburg, and Dr. L. T. Royster, of University.

Epidemic Prevention Part of Disaster Relief.

Prevention of epidemics following disasters which leave wreckage and other devastation

behind, is one of the first important steps which Red Cross relief workers have learned to take.

A tropical hurricane which devastated the town of Houma, Louisiana, late in the summer, offers an example of this work. Seeing in the conditions following the disaster the possibilities of a typhoid epidemic, the relief workers sought and obtained the co-operation of the Louisiana State Board of Health, in the task of inoculating all persons in the danger area. The State supplied a laboratory boat, two bacteriologists and a nurse to aid local health officers and the Red Cross, and at latest reports several thousand persons had been inoculated against possibility of disease. The State Conservation Department, also at the suggestion of the Red Cross, sent a boat to supply fresh water. No epidemic had developed as this was written.

In this disaster, it was expected that at least two months would be required to complete the Red Cross relief operations, which include permanent rehabilitation for those in need of such assistance. Disaster relief is an outstanding duty of the American Red Cross, and it is to maintain this, and all its other valuable services, that the co-operation of the people, through membership in the organization, is sought during the Annual Roll Call, November 11th to 25th, this year.

Community Backyard Playgrounds.

A new plan for playgrounds in sections where children have no play space other than city streets is suggested in the recent appeal of the Park Commissioner of Brooklyn, N. Y., to remove fences between backyards and permit use of the space thus afforded as community playgrounds. The Park Commission offers by way of illustration a survey made by its officials of a typical residential block, with a design for a playground layout, and will co-operate with suggestions for laying out the grounds and advice in regard to equipment.

Dr. E. N. Lillard,

Formerly of Madison County, Va., is now located in Miami, Fla., where he is engaged as Medical Officer with the city health department.

Dr. and Mrs. J. G. Carter,

Richmond, Va., are spending sometime in Philadelphia, where Dr. Carter is taking special work at the University of Pennsylvania.

The Ex-Interns' Association of St. Elizabeth's Hospital, Richmond,

Held its third annual meeting at the hospital, in this city, October 5th. Fifteen of the twenty-three members were present and an excellent scientific program was presented, Dr. Wright Clarkson, of Petersburg, Va., presiding. Between the morning and afternoon sessions, luncheon was served at the Commonwealth Club and, in the evening, Dr. J. Shelton Horsley entertained the members at supper at his home in Westmoreland Place. Dr. E. L. Caudill, Narrows, Va., was elected president, Dr. R. H. Wood, Atlanta, Ga., vice-president, and Dr. J. S. Horsley, Jr., was re-elected secretary-treasurer.

Mortality Statistics.

Some interesting facts brought out with regard to mortality statistics for 1925 in Virginia are that diseases of the heart and the circulatory system claim first place as the cause of death. Nearly thirty per cent of the deaths in Virginia were due to diseases involving the circulation of the blood. There were nineteen deaths from rickets—six white and thirteen colored. For the first time since the organization of the Bureau of Vital Statistics, 1925 failed to show a decline in the death rate from typhoid fever over the preceding year. This fact was not confined to Virginia, however, as every southern state showed a higher death rate from this disease, and, for the first time in many years, a higher typhoid rate was recorded for the entire registration area throughout the United States.

Dr. and Mrs. A. M. Sneed,

Of Toano, Va., have recently returned home from a two weeks' motor trip to Niagara, Canada and New York City.

Dr. Matas Honored.

It is announced that the Jacob Bigelow Medal has been awarded by the Boston Surgical Society to Dr. Rudolph Matas, of New Orleans, for being one of the men who has done most for the advancement of surgery. Previous awards of this honor were to Dr. William J. Mayo, of Rochester, Minn., and to Dr. William W. Keen, of Philadelphia.

Nicholas Senn Beckett,

Youngest son of Dr. and Mrs. H. C. Beckett, of Chase City, Va., has recently received the appointment of prosecuting attorney for the U. S. Government, and is located in the Revenue Department in Philadelphia.

Dr. and Mrs. J. C. Moxley,

Of Independence, Va., left the middle of October for New York, where Dr. Moxley will take a special course of study and attend clinics for several months. They will also visit Philadelphia and other Northern cities while away.

Dr. B. B. McCluer,

Of Speedwell, Va., has returned home after a visit to his parents in Bon Air, Va.

The Virginia Pediatric Society

Was organized in Norfolk, during the meeting of the Medical Society of Virginia, for the purpose of advancing the cause of pediatrics in this State. Dr. N. Thos. Ennett, Richmond, was elected president, Dr. L. T. Royster, University vice-president, and Dr. W. B. McIlwaine, Petersburg, secretary-treasurer.

Dr. J. Beverly DeShazo,

Formerly of Ridgeway, Va., is now in his office at that place only one day each week, the rest of his time being given to the practice of dermatology and urology at Burlington, N. C. He still retains his citizenship in this State, however.

Miss Welhelmina Wright,

Daughter of Dr. and Mrs. J. A. Wright, of Doswell, Va., was quite badly hurt early this month, when an automobile ran into the back of her car, causing her to be thrown through the windshield. She suffered several very bad cuts, which rendered her unconscious for sometime, but was reported better as we went to press.

Dr. Louis E. Foulks

Returned to Alexandria, Va., the middle of October, after a trip of several months, during which time he also visited his former home in New Jersey.

Edmunds Hospital,

Danville, Va., has purchased a residence near the hospital to be used as a nurses' home, and will convert the building now occupied by the nurses into a part of the hospital, thus giving increased accommodations for patients and necessary hospital rooms.

The Association of American Medical Colleges,

At its meeting the last of October, elected Dr. Charles F. Martin, of Montreal, president, and Dr. Fred C. Zapffe, Chicago, secretary. The next meeting is to be held in Montreal.

Dr. J. Bolling Vaiden,

Formerly of New Kent C. H., Va., has located at Highland Springs, Va., where he is associated with Dr. Jas. T. Leftwich.

Development Record.

In response to requests frequently made of the American Child Health Association, 370 Seventh Avenue, New York City, they have issued a Development Record designed by Dr. Borden Veeder, of St. Louis, which is adapted for the use of the physician in his private practice as a simple and practical examination form for pre-school children. The form may be had in quantities of 25 at the price of $1.75, larger quantities being relatively cheaper.

Southern Medical Association.

Good scientific programs, entertainments, sports, reunion dinners, etc., are in store for those attending the twentieth annual meeting of the Southern Medical Association in Atlanta, Ga., November 15, 16, 17 and 18. If not yet a member, you are eligible to membership if a member of your State Medical Association, so secure a certificate of membership and attend if you want to take a pleasant vacation. Dr. C. C. Bass, of New Orleans, is this year's president.

Dr. Adrian X. Urbanski,

Of the class of '24, Medical College of Virginia, having completed a service at the Newark (N. J.) City Hospital, has established his offices at 148 Market Street, Perth Amboy, N. J., for the practice of his profession.

The Tenth District Medical Society of North Carolina,

At its semi-annual meeting recently, elected Dr. Charles Z. Candler, of Sylva, president, and Dr. Donald M. McIntosh, of Old Fort, secretary-treasurer.

Child-Health Examination in Chicago.

148,000 children in the schools of Chicago were examined last year through the work of the Chicago Municipal Tuberculosis Sanitarium. 100,000 of the children were in kindergarten or first grade. 110,000 were found with defects serious enough to need treatment, and 43 per cent of these received the ncessary corrections of defects.

Wanted—

Second interne, January 1, 1927. Roanoke Hospital, Roanoke, Va. 110 beds, general service. Salary $75.00 per month and maintenance. Apply to the Superintendent. (Adv.)

Dentist Wishes Location.

Dentist with several years' experience wishes to locate in one of the cities or towns of Virginia or West Virginia. Would consider association with physician or specialist. Address No. 8, care this journal. (Adv.)

Wanted—

By or before January 1st, position in doctor's office, by woman experienced in laboratory, X-ray and secretarial work. References. Address No. 7, care this journal. (Adv.)

Obituary

Dr. Humphrey Singleton Belt,

South Boston, Va., well known and beloved physician and surgeon of Southern Virginia, died October 9th, from angina pectoris. Though Dr. Belt's health had not been good for the past year, his condition had not been considered serious. He was born near Chatham, Va., fifty-seven years ago. After studying medicine at the University of Virginia, he went to Baltimore and studied for a year, taking his diploma from the University of Maryland in 1892. He located in South Boston about thirty years ago and established the Halcyon Hospital in that place about seventeen years ago, constantly making additions to the hospital to care for its increasing number of patients. He had been a member of the Medical Society of Virginia since 1904. His wife and two sons survive him.

As a memorial to Dr. Belt, a number of the citizens of South Boston and vicinity are planning to take over the Halcyon Hospital which he established and owned and continue its service to the community.

Dr. John Wilkins Brodnax,

Richmond, Va., associate professor of anatomy at the Medical College of Virginia and known and loved by many alumni of that school for his geniality of manner and ability, died at a local hospital, October 20, at the age of sixty-two years. He was a native of Petersburg, Va., and studied medicine at the Medical College of Virginia, from which he graduated in 1891 and joined the Medical Society of Virginia two years later. Upon establishment of the former University College of Medicine in this city, he became a demonstrator in anatomy, and, upon consolidation of the two Richmond schools, was made associate professor in this branch, which position he held to the time of his death. He had been coroner of Manchester (later South Richmond) for more than thirty years. Dr. Brodnax was talented as an artist and sculptor, as well as an anatomist, and had made many notable drawings and paintings, especially in anatomy. As a sculptor, he is perhaps best remembered by the bust he made of Dr. Hunter McGuire, which was placed in the Medical College of Virginia building. Dr. Brodnax is survived by his wife and seven children and three sisters.

Dr. James M. Gibson,

Beloved physician of Suffolk, Va., died in that place October 10th, at the age of seventy-two years. He was a native of Ohio, and received his diploma in medicine from the Columbus Medical College, Columbus, Ohio, in 1874. He had been a member of the Medical Society of Virginia since 1899. A son, Dr. W. C. Gibson, resides in Suffolk.

Dr. John T. Wilkins,

Retired physician of Bridgetown, Va., died at a Norfolk hospital, October 12. He was seventy-three years of age and was formerly a member of the State Legislature and former chairman of the Virginia Commission of Fisheries. Two daughters and a son survive him. One of his daughters is the wife of Dr. W. L. Dalby, of Bridgetown.

Dr. William W. Faison,

For twenty years superintendent of the N. C. State Hospital for the Colored Insane, Goldsboro, N. C., died suddenly in his office, October 22nd. He was seventy-two years of age and had studied medicine at Jefferson Medical College, Philadelphia, from which he graduated in 1878.

Dr. Francis Miles Chisolm,

Washington, D. C., formerly associate professor of ophthalmology in the University of Maryland School of Medicine, died September 21, aged fifty-nine years. He had graduated from the University of Maryland School of Medicine in 1889 and saw service in the World War.

PARKE, DAVIS AND COMPANY

ADRENALIN INHALANT

A USEFUL PALLIATIVE IN NOSE AND THROAT INFLAMMATIONS

IN catarrhal congestion of the mucosa of the nose and throat, whether caused by infection or by allergic hypersensitiveness, Adrenalin Inhalant affords immediate relief. It is applied by means of an oil atomizer or nebulizer. It may be utilized in full strength, or diluted one part to four parts of pure olive oil or other high-grade vegetable oil. Mineral oils should not be used—they do not make a perfect mixture.

Adrenalin Inhalant is also useful in controlling hemorrhage from the mucous membrane when it can be applied directly to the bleeding surface on cotton or in the form of a spray, as in nose-bleed or the nasal or laryngeal bleeding of diphtheria.

In "colds," especially when there is supraorbital headache from blocking of the frontal sinus, Adrenalin Inhalant is indicated. It frequently relieves the congestion and swelling so that drainage is re-established and the headache disappears.

Adrenalin Inhalant has also been suggested for the relief of earache with impaired hearing in children, brought about by enlarged tonsils and adenoids. A few minims of the Inhalant are warmed and dropped into the ear, and the nose and throat are sprayed with the Inhalant in dilute form.

Adrenalin Inhalant is a 1:1000 oily solution of Adrenalin Chloride, and contains 3% of Chloretone. It is supplied in 1-ounce bottles only.

PARKE, DAVIS & COMPANY

DETROIT, MICHIGAN

ADRENALIN INHALANT IS INCLUDED IN N. N. R. BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION

Capital $1,000,000 Surplus Earned $1,500,000

ESTABLISHED 1892

To act as Executor, Guardian and Trustee

$30,000,000

of investments held in Trust

Confidential Interviews Invited.

Established 1861

HANGER SUBSTITUTE LEGS AND ARMS

—are the result of sixty-five years' experience in limb manufacture.
—are considered Nature's Rivals. Users throughout the entire world recommend and endorse Hanger Limbs as the best obtainable.

J. E. HANGER, Inc.

WASHINGTON, D. C., 221-223 G. St., N. W.

BLUEFIELD, W. VA., 614 Raleigh St.

also in 20 other American and European cities.

Three Travelling Representatives in Virginia

INCORPORATED 1871

LIFE INSURANCE COMPANY OF VIRGINIA

RICHMOND, VIRGINIA.

WE WISH TO CALL ATTENTION, ESPECIALLY TO THE YOUNG MEN OF THE MEDICAL PROFESSION, TO THE ADVANTAGES OF THE ECONOMIC POLICY

This form of Insurance is especially adapted to men of moderate means with growing families, the insurance being arranged so as to give the greatest amount of protection at the time most needed and at the lowest possible premium. This policy contains a very attractive convertible clause which makes the contract elastic.

RATES FOR WHOLE LIFE—10-PAYMENT, 15-PAYMENT OR 20-PAYMENT ECONOMIC POLICY WILL BE QUOTED UPON APPLICATION

JOHN G. WALKER, President

THE N. Y. ACADEMY OF MEDICINE
DEC 15 1926
LIBRARY

Virginia Medical Monthly

OFFICIAL ORGAN OF THE MEDICAL SOCIETY OF VIRGINIA

Vol. 53, No. 9.
WHOLE No. 894.

RICHMOND, VA., DECEMBER, 1926

$2.00 A YEAR
20 CENTS A COPY

CONTENTS.

ORIGINIAL COMMUNICATIONS:
Shall They Pass? J. Allison Hodges, M. D., Richmond, Va. 557
Practice of Medicine—How It Should be Regulated by Law. H. U. Stephenson, M. D., Richmond, Va. 559
The Present Laboratory Technician Situation in the State. Charles Phillips, M. D., Richmond, Va. 562
Spontaneous Pneumothorax—With Report of Cases. H. B. Mulholland, M. D., and J. C. Flippin, M. D., University, Va. 565
The Treatment of General Peritonitis and Allied Conditions. Julian L. Rawls, M. D., F. A. C. S., Norfolk, Va. 567
Etiology and Pathology of Diseases of the Gall-Bladder. R. A. Morison, M. D., Abingdon, Va. 572
Diagnosis of Cholecystic Disease. Harry W. Bachman, M. D., Bristol, Va. 576
Mistaken Diagnoses of Intestinal Parasites. R. H. Harrington, M. D., Grant, Va. 579
The Kielland Forceps. M. Pierce Rucker, M. D., Richmond, Va. 580
Essential Thrombocytopenia (Purpura Hemorrhagica). A. B. Hodges, M. D., Norfolk, Va. 582
A Consideration of the Progress and Value of Consultation. Frank S. Johns, M. D., Richmond, Va. 588
Report of One Hundred Consecutive Cases of Salpingitis. G. H. Reese, M. D., Petersburg, Va. 589
Report of A Case of Cyst of the Thyro-Glossal Duct. E. G. Gill, M. D., F. A. C. S., Roanoke, Va. 591
The Management of Acute Abdominal Complications During Pregnancy. Arthur S. Brinkley, M. D., Richmond, Va. 591
Adynamic Ileus in Urology. R. M. LeComte, M. D., Washington, D. C. 596
Differential Diagnosis of Some of the More Common Skin Diseases. W. F. Manley, M. D., Roanoke, Va. 597
Diagnosis of Disease of the Nasal Accessory Cavities. C. E. Bowles, M. D., Pulaski, Va. 599
Complications Incident to the Operative Treatment of Inflammatory Diseases of the Gall-Bladder. Aime Paul Heineck, M. D., Chicago, Ill. 603
CORRESPONDENCE 611
WOMAN'S AUXILIARY, MEDICAL SOCIETY OF VIRGINIA 612
THE TRUTH ABOUT MEDICINE 612
BOOK ANNOUNCEMENTS 615
EDITORIAL 616
NEWS NOTES 620
OBITUARY 627

INDEX OF ADVERTISERS—Advertising Page 5.

Dosage is Important

TO obtain the full benefit of creosote medication in tuberculosis and bronchitis the dose must be sufficiently large.

This is what makes Calcreose so valuable

Calcreose practically eliminates the possible disturbing effects of plain creosote thus making it feasible to give large doses of this valuable drug over long periods of time and insuring therapeutic effect.

Whenever you want the stimulating expectorant effect of creosote use Calcreose.

CALCREOSE is a loose chemical combination of creosote and hydrated calcium oxide. It represents about 50% creosote in tablet form. It is easily administered and particularly suitable as an adjunct to other remedial measures.

POWDER ∽ TABLETS ∽ SOLUTION

Samples of tablets and catalogue on request

THE MALTBIE CHEMICAL CO. NEWARK, N. J.

Calcreose

INFANT DIET MEAD'S MATERIALS

Cow's Milk, Water and MEAD'S DEXTRI-MALTOSE

has been successfully used for years in the feeding of infants deprived of their natural food.

It is the carbohydrate of choice because it can be assimilated by the infant in greater amounts than other sugars.

It requires the least amount of energy on the part of the infant to assimilate it.

It is less likely to cause diarrhea than other forms of carbohydrate.

It produces a quicker gain in weight than any other form of carbohydrate.

Where certified milk or milk of equal quality cannot be obtained, MEAD'S POWDERED WHOLE MILK reliquefied by the addition of 4 level tablespoonfuls or one ounce of the dry powder to 7 ounces of sterile water may be substituted for the liquid milk called for in the formula.

The Mead Johnson Policy

MEAD'S Infant Diet Materials are advertised only to physicians. No feeding directions accompany trade packages. Information in regard to feeding is supplied to the mother by written instructions from her doctor, who changes the feedings from time to time to meet the nutritional requirements of the growing infant. Literature furnished only to physicians.

MEAD JOHNSON & COMPANY

EVANSVILLE, INDIANA, U.S.A.

Manufacturers of Infant Diet Materials Exclusively

Virginia Medical Monthly

Official Organ of the Medical Society of Virginia

Vol. 53, No. 9.
WHOLE No. 894.

RICHMOND, VA., DECEMBER, 1926

20 CENTS A COPY
$2.00 A YEAR

Original Communications

SHALL THEY PASS?*

By J. ALLISON HODGES, M. D., Richmond, Va.

This discussion, while not directly scientific, is intended to be distinctively professional. Its main purpose is to ascertain the opinion and formulate the decision of the members of this Society, if possible, upon the advisability of adding any additional members of any of the different cults to the existing State Board of Medical Examiners. Recently, this subject has acquired more than usual professional interest, due to the fact that repeated attempts to change in various ways the present medical laws of the State have been suggested by the adherents of those seeking State license to practice the Healing Art.

As a result, three schools of thought have appeared in our profession, the one maintaining that it might be best to allow a representative of any fairly large following of any specified system of healing to have its representative upon the State Board of Examiners, and thus quiet the recurring agitation of this question, while another, asserting that the present laws are sufficient if only properly administered, would let the matter rest, while still another group would offer no objection, asserting that in a democracy such as ours, the people should have just what they wish, and that the medical profession should not be the sole administrator of the law.

These different points of view apparently prove that many in the profession have become disgusted with the recurring biennial exhibition at each succeeding legislative session, when our profession is put upon the defensive, often to the detriment of its dignity, and more frequently to the exploitation and advertisement of the irregular practitioner. We blame no one for this, for many of us have been sorely tried and harassed, when our altruistic motives have been misconstrued, because misunderstood, but we deplore that final judgment which virtually admits defeat because of lack of sufficient education of the masses as to the value and accomplishments of the Science of Medicine. Until the people at large, however, are educated and enlightened as to these facts, they must be held blameless, and, on the other hand, no one is to be considered more responsible for this state of affairs than the medical profession itself, which has never entirely taken the public-at-large into its confidence and support.

We must realize, and be willing to assert it, that we are not only practitioners of medicine, but that we are commissioners of Health to all the people, and that ours is the only system of the Healing Art that has not only cured disease, but prevented it, and the only one that is accredited by the great governments of the world. Our professional allegiance and duty demand this of us, and in these days of increasing commercialism, we should not forget our obligations, nor depreciate our opportunities.

But what can we do practically and efficiently to meet this condition? Obviously, we cannot deny, nor limit the introduction of new bills, and it is equally obvious that a continuance of these public biennial exhibitions of pseudo-science are not enlightening to the public, nor beneficial to the regular profession, and yet, something should be done, representing the consensus of opinion of the whole profession, which would be best for present and future professional interests. In our opinion, this end can be reached in one way only, and that is, by means of Public Health Education, which in this day of increasing knowledge has become an elemental necessity. This means a new kind of education for the physician, as well as the public. There must be an awakening of the medical conscience as to the trusteeship of physicians as promoters and conservers of community, as well as of individual health.

Physicians are best qualified to give to the public the basic principles of health preservation, and they must assume their responsibilities and live up to their opportunities. The public is already demanding public health education increasingly each year, and in

*Read before the fifty-seventh annual meeting of the Medical Society of Virginia, at Norfolk, October 12-15, 1926.

answer to this Macedonian cry, the physician must become to a greater degree the educator as well as the practitioner. The people should know the distinct achievements in the advance of medical science, and know, also, that they have been offered freely to the world as our profession's contribution for the protection and preservation of life.

In this fast-moving age, the individual as a personal entity has been merged largely into the group class, and the facilities for mass education have never been so numerous, nor so effective. Already physicians have accomplished much, individually and through their associations, through medical colleges and state and federal governmental agencies, but the people do not know these things; they do not know even that nearly all of the great discoveries and inventions in the field of scientific therapy "which have extended the average of human life in the memory of us all over ten years, and which in the future will extend it another decade by eliminating the epidemics which in the past have swept millions to an undeserved death, can be traced to the door of the doctor—never to the gilded den of the quack."

In the future, the doctor must not be the lone voice crying in the wilderness, he must forego his time-honored reticence, "his innate fear of publicity and the supposed restriction of his ethical limitations, which have tended to prevent him from covering his proper field for a physician's activity in teaching the people how to keep well."

The intelligence of the non-medical public is quite as high as that of the medical world, and this must be considered, be evaluated and be made productive by co-operative effort and the relationship of mutual interests. In short, the public must be taken into the confidence and knowledge of the physician, and share alike in the great and glorious results that await their combined strength and influence in this ultimate plan of universal health education.

It has been claimed by some puny pessimists that since quacks still exist, and have always for that matter, nothing can be done, nor has ever been done, to remedy the evil, but this is idle gossip, due only to the misconception by the doctor of one of the basic duties of his profession, and the consequent ignorance of the public because of the lack of proper knowledge or because of misrepresentation of the true facts by designing irregular practitioners.

Probably there was never a time when a closer relationship between the doctor and the public was more desirable, or more necessary than at present, for the increasing number of specialists, and the decreasing number of country practitioners, together with the materialistic attitude of some of our unthinking members, have made the gap between physician and patient wider, and to a certain extent undermined the respect in which the medical profession is held. As proof of these facts, it may be stated briefly that, during a sixteen year period of one of our great medical universities, this intitution has sent out 965 graduate doctors, and only four of them today are practicing their profession in rural districts, and many, if not most of the others, have entered the field of specialism.

The case of the mountainous section of Virginia, West Virginia and North Carolina is outstanding, for five million mountaineers, pure-bred Americans, live in isolation in their highland empire, without a single doctor in some of the counties. Granting, then, that a medical necessity exists, and that education, and education alone, of both the physician and the public can meet this situation, and thus unhorse the medical pretender, who is seeking legal recognition, what is the practical solution?

Recommendations.

As a general plan for preventing and eliminating the conditions named, and as an entering wedge into what must ultimately become universal health education, the following recommendations are submitted:

1. That the Medical Society of Virginia reaffirms its approval and adherence to the medical laws (Medical Bill; Chapter 68, Regulating the Practice of Medicine) of this State, and pledges its continued professional support in their administration;

2. That it discountenances at the present time any addition to the membership of the State Medical Examining Board;

3. That it memorializes the House of Delegates at this session to consider and, if possible, formulate some definite plan for dealing with the medico-legislative problem;

4. That, for this purpose, it offers for its consideration the following plan: The appointment by the State Chairman of the Executive Council of a local Professional Relations Com

mittee, consisting of three physicians resident in each Councilor district, who shall have charge locally, with the State Chairman of the Executive Council and the Chairman of the State Legislative Committee, of all medico-legislative problems that may arise in such districts;

5. That these local committees in each Councilor district shall have the right to organize according to their own preferences, and shall have the authority to associate with themselves such local medical, educational, religious, health and lay associations, especially the local Woman's Auxiliary, as they may deem proper, the local chairman keeping the State Councilor Chairman informed, and he in turn, to keep in contact with the State Legislative Chairman in all matters relating to medical legislation.

In brief, the dominant purpose in all this, is to develop direct contacts through associated and helpful agencies in the home districts that will educate the law-makers and the public to secure the enactment of constructive legislation designed for the common good. This will be no easy task, but it is not an impossible one, and is one that should appeal, not to the profession as a mere profession, but to the true and loyal spirit of the profession of medicine. Medical legislation is only a means to an end, and the average legislator is ready to listen to an unbiased lay opinion; consequently, the desire of the physician not to gain a patient, but for the patient to gain health, will be better understood and appreciated.

We should not forget that most of the legalized advances in the prevention of disease have been due to medical legislation, and we should encourage and foster, not criticize nor hamper unduly the methods pursued, be they honest legislators seeking the light and knowledge of a better understanding of some of these new and difficult medical problems, for we, as a profession, are under distinct obligations to them for many constructive measures advantageously affecting the profession and the health of our citizens.

They still will need education, and we will need their help and co-operation. Our vantage ground is higher and our lights are clearer, and we must lead the way to a better understanding and realization of our high and honored ideals of service to the profession and the people. If we do not, our ceaseless and brilliant research work for the advancement of science and the betterment of humanity will be for naught. The Principles of Ethics of the American Medical Association begins with these words: "A profession has for its prime object the service it can render humanity."

To translate this aphorism into practical application, without bias or prejudice, no profession probably has had to battle so long and continually as ours, but the inestimable boon of health for all the people is one of their inalienable and guaranteed rights under the constitution. We, as self-appointed guardians and heralds, must see to it, that the temple is kept pure and undefiled, and that they who, either ignorantly or maliciously would soil or tarnish its sacred precints, "shall not pass."

5 *East Franklin Street.*

PRACTICE OF MEDICINE—HOW IT SHOULD BE REGULATED BY LAW.*

By H. U. STEPHENSON, M. D., Richmond, Va.

In what does the practice of medicine consist? I conceive that all doctors agree on the following definition. Some might wish to amplify it, but I think that none would curtail it.

The practice of medicine might properly be assumed to mean the utilization of all scientific means that promise the relief of pain, the cure of disease and the prolongation of human life.

If doctors were not experimenters, the science of medicine would stagnate. New methods of treatment are constantly being devised; new operations in surgery are not infrequent; but the new methods and the new operations are alike based on knowledge which is the result of ages of study, of patient investigation.

Science is an all-embracing term. Planets have been proved by great mathematicians who had little knowledge of astronomy. Physicists have made possible some of the great developments of chemistry. So medicine owes much to other branches of study, to physics, to chemistry, and more particularly to that branch of biology that is called bacteriology, with its related science, bio-chemistry.

But does the practice of medicine properly include the utilization of methods or discoveries or operations or plans that are in dissonance with its store of knowledge gained through the centuries? I am not sure that

*Read before the fifty-seventh annual meeting of the Medical Society of Virginia, at Norfolk, October 12-15, 1926.

this question may lightly be dismissed with a mere negative. We have no right to say that there is nothing new under the sun; but we have the right—yea, it is our duty—to think seriously before accepting theories that conflict with facts that we know have been established, and to demand that those who offer such things for our acceptance present at the same time testimony to prove their claims for recognition and acceptance.

I need not recall to your minds the details of the great anthrax challenge given by Pasteur, but when that master bacteriologist staked his reputation on the successful immunization of twenty-five out of a herd of fifty sheep and pledged that the twenty-five unimmunized would contract anthrax, he offered proof. The challenge having been upheld by the actual experiment he gave proof; and doubters were silenced.

We now may wonder at the doubters; but certainly in modern times doctors of medicine are justified in doubting. In fact, their positions in society force them to doubt. A doctor is not merely an agent who practices medicine; he is, in effect and reality, a safeguard against those who would practice improperly or would risk the health and the lives of human beings in the testing of plans and schemes which seem to him hazardous.

Individual doctors have neither the time nor the inclination to do all that really lies in the line of their duty to protect the public against those who ignorantly or through avarice offer services that can not help and may seriously hurt. This is no reflection on the individual doctors. The public can not realize the responsibility which a doctor feels deeply; and being unaware of this sense of guardianship, the public is only too apt to regard as selfish and mercenary the efforts of doctors to stop the work of these irregular healers or curers. It was official recognition of that fact which led the States to create medical examining boards, charged with the specific duty of licensing or withholding license from those seeking to practice medicine.

In Virginia, and virtually the same definition holds good throughout the United States, the practice of medicine is by the Code (see Sec. 1622) defined as follows: "Any person shall be regarded as practicing medicine within the meaning of the chapter (the chapter dealing with the duties of the State Board of Medical Examiners) (1) who opens an office for such purpose, or announces to the public in any way a readiness to practice medicine in any county or city of the State, or prescribe for, or give surgical assistance, heals, cures, or relieves those suffering from injury or deformity or disease of mind or body, or advertises, or announces to the public in any manner a readiness or ability to heal, cure or relieve those who may be suffering from injury or deformity, or disease of mind or body for a compensation; (2) or who shall use in connection with his name the words or letters, 'Dr.', 'Doctor', 'Professor', 'M. D.', or 'Healer', or any other title, word, letter or designation intending to imply or designate him as a practitioner of medicine in any of its branches, or of being able to heal, cure or relieve those who may be suffering from injury or deformity or disease of mind or body. This section shall also apply to corporations."

The code also contains a liberal section regarding the rights of those who may be graduates of sectarian schools of medicine, relieving them of the necessity of taking examinations in subjects which would be necessary information for the regular practitioner. Because osteopathy is "Sectarian" within the meaning of the code, an osteopath has been added to the examining Board; for the same reason, there is a homeopath on the Board.

I am mentioning these branches with the hope that there will be no discussion of the wisdom or unwisdom of these additions. There was considerable opposition to the inclusion of each; and there are today many of our members who are unreconciled; but the facts are accomplished, whether for good or ill; and discussion will do no good.

Now, as to future additions, how are they to be determined? Are the Virginia doctors to be left fighting single-handed for the protection of the public? It is an easy thing to understand the attitude of the uninformed who are told that this effort at exclusion is nothing more than the guild spirit which would protect the incomes of the chosen few and prevent earnings for others equally qualified. Of course, highly intelligent laymen do not credit this nonsense; but there are few communities anywhere that can boast a large proportion of widely cultured and highly intellectual people.

It would seem to me to be an excellent thing, from the viewpoint of the State, of the citizens, and of the professions, if there were to be

created in Virginia a non-technical commission of scientists, composed of members of the faculties of our institutions of higher learning and professional schools. No profession should be represented by more than one member; in fact, the membership should be chosen without consideration of profession or calling but on the basis of the character and ability of the men who would be members.

It would be the duty of this commission to hear the claims of any group asking for recognition, either by the creation of a new board to control practice, or entrance, or for the addition of membership to an existing board for a like purpose; and, if, for example, in the judgment of such men it should be decided that the healing, curing or relieving of some of the gravest troubles of body or mind should be entrusted to the care of men who have educational qualifications less than those needed for entrance to a medical school, the General Assembly of Virginia should accept that judgment. The people would undoubtedly suffer, but our profession could not be charged with failure to attempt the protection of health and life in Virginia.

As it is, in our State as in others, legislators must not be blamed too severely for listening to the blandishments of those who seek for their group a higher social or professional standing than they have occupied. The legislators are not fully informed; they are assembled for a brief session; they have manifold duties to perform; they hear fervid pleas for the new science, new healing art, or what not, and they ask themselves—"What harm can it do to recognize them?"

With such a commission as I have suggested, the doors would not be closed to those special pleaders; nor would the doors be closed to those who would oppose the special pleas, but, at least, the whole subject would be placed before the legislators with a recommendation from an unbiased, scientific body, whose members sit as members of college faculties, who can have no possible prejudice against any set of claimants.

The present medical practice act of Virginia is perhaps the best law governing the practice of medicine of any of the States in the Union. In fact, but for the shrewd lawyers camouflaging with imaginary technical points under our law, we would have no difficulty convicting. Dr. J. W. Preston, Secretary of the State Board of Medical Examiners, has kept in close touch with the Commonwealth's Attorney prosecuting violators of the Medical Practice Act and is in a better position to know the weak points in our law than any man in the State. He thinks the law can be strengthened by the following amendments:

1. Clause requiring an applicant wishing to undertake the Practice of the Healing Art in any of its branches to present to the Commissioner of Revenue in the locality in which he wishes to locate, proper proof that he holds, and that he has registered his State Board Certificate in the clerk's office of said County or City, and, likewise, that a penalty be provided for neglect upon the part of applicant or Commissioner to meet the requirement.
2. An enactment providing for the serving and enforcing of an injunction against those having been convicted of illegal practice, who attempt to continue such practice.
3. An enactment making it unlawful to advertise medical practice, drugs, or appliances, by statements exaggerating the potency of such practice, drugs, or appliances, or having a tendency to deceive, or defraud the public, as relates to the care or treatment of disease or disability.

Dr. Preston suggests, in the event a revision should be undertaken, a perusal will show that a proper punctuation of certain passages together with slight changes in wording would in a measure clarify the Act.

Dr. Ennion G. Williams, State Health Commissioner, in reply to my request for suggestions improving the Medical Practice Act, has this to say:

"I have been thinking about your request for suggestions for improving the Medical Practice Act. It would seem to me that this request would include any changes that might be made regarding the duties of the State Board of Medical Examiners. As I understand, their principal function is to safeguard the people against parties not qualified to practice medicine. If they are to safeguard the people against improperly qualified practitioners, it would seem that their duties and authority would extend to seeing that the people were adequately supplied with properly qualified practitioners; or, in other words, that the possibilities offered by the science and art of medicine should be made available to all the people of the State.

"At the present time much suffering could be relieved and life prolonged by the use of knowledge known to the medical profession. It should be the function of some official agency of the State government to make available to all the people what the medical profession offers. In some communities the doctors are not available. In some communities there are doctors but the people have not the finan-

cial resources needed to secure for themselves the services of a doctor. This does not mean that the people are paupers or entirely without financial means, but that their finances are not such as to meet the requirements of the doctors for rendering service.

"As the State contributes largely to the education of a doctor, should not the State see that possibilities of medicine are made available to all the people? If the State Board of Medical Examiners is entrusted with safeguarding the people against unqualified practitioners, should it not also see that the advantages of curative medicine are made available to all the people?

"This is a problem that should be taken up for consideration by the State Board of Medical Examiners, some other official organization, or by the medical profession through its organizations. For one reason or another, the people are not securing the wonderful possibilities that the science and art of medicine offers.

"I recognize the fact that the State Board of Health might have some responsibility in this matter. We have been endeavoring to meet it in a small way but in our efforts to do so we are not receiving the co-operation of some members of the medical profession. This is a problem that must be solved; and, if the medical profession or the official agencies will not co-operate with us in reaching a solution, I fear that volunteer and unprofessional associations will solve it in a way that will not be satisfactory."

The changes suggested by Dr. Preston will add materially to the strengthening of our present law.

Points brought out in Dr. Williams' suggestions are to me very important ones. I believe that the State Board of Medical Examiners should have absolute control and authority in regulating the practice of medicine, with sufficient power to act when emergencies arrive, such as Dr. Williams suggests.

A Committee at this session of the Medical Society should be appointed for the purpose of drafting proper amendments to the present Medical Practice Act and report at the meeting of the Medical Society next year, the Society as a whole to pass on the entire bill.

2210 *West Grace Street.*

Papers by Dr. Hodges and Dr. Stephenson were discussed in the House of Delegates of the Medical Society of Virginia, report of which appeared in the November MONTHLY.

THE PRESENT LABORATORY TECHNICIAN SITUATION IN THE STATE.*

By CHARLES PHILLIPS, M. D., Richmond, Va.
Professor of Pathology, Medical College of Virginia.

Last year at the State Society meeting there was a brief discussion of the present activity of the State Board of Health in doing so many Wassermann tests free for the physicians. This followed a criticism of the State Board for cutting so deeply into the earnings of private laboratories which formerly looked to considerable income from Wassermanns. Among the questions raised in the minds of some were those related to just who conducts these tests in the State and how reliable are laboratory technicians in general. The writer has recently undertaken a brief survey of the whole situation and here gives a simple resume of the study.

The American hospital directory lists about 95 hospitals in the State and most of these were sent questionnaires asking for data about their technicians. One hundred letters were sent out to hospitals and to a few city and private laboratories. Fifty-three replies were collected and tabulated. With only about half of the State covered, deductions from these figures would appear inaccurate, and here only approximate values are claimed. Information gathered from other sources supplements the questionnaires to a point where this study actually about represents the present situation faithfully.

It is estimated that there are about 80 laboratory technicians at work in the State. There are about 20-25 men and 50-60 women, or more than twice as many women as men. They work an overage of 7¾ hours a day. The data collected shows an average pay of $116 a month for all kinds of technicians, and among them those on duty in hospitals and private laboratories get $106 a month, some with and some without maintenance, which often amounts to $40-$45, a month extra. Some technicians employed in several public health laboratories have administrative duties, and their pay is considerably above the average, in some cases being around $200 a month. Apparently the lowest paid technician in the State gets $25 a month and maintenance plus treatment for his tuberculosis in a sanatorium, while the highest is a capable public health city laboratory director and gets $225 a month.

Laboratory technicians in Virginia may find

*Read at the fifty-seventh annual meeting of the Medical Society of Virginia, in Norfolk, October 12-15, 1926.

work in one of three places—in a small private laboratory maintained by one or more doctors, in hospital laboratories, or in public health laboratories. Their hours of duty are much the same but the things they do vary considerably, with a tendency to better pay in the latter group. The small hospital of 50 beds or below often assigns other duties to its technicians, and one place is reported where the superintendent of the hospital is also a laboratory technician. Some of these teach the nurses, some do anesthesia, some take histories and records, and quite a number combine X-ray technical work with clinical pathology.

You might ask where they were trained. This study shows the majority trained within the State either at the University of Virginia, the Medical College of Virginia, or in some of the larger hospital laboratories. There are several trained abroad, several in the Army or Navy, and some at northern medical schools or hospitals. Four report training at the Gradwohl School of Laboratory Technic at St. Louis. Many have gotten their start as understudies in regularly established laboratories in larger hospitals. In a few instances physicians are doing technician's work and being paid in various ways. The Army and Navy hospitals use their enlisted personnel assigned for this work. The State insane hospitals have such work done by their own medical staff. This study has as far as possible limited the term technician to those not doctors. From the returns of this questionnaire, it is evident that most of the technicians in our State have been doing laboratory work from 4 months to 15 years, the average being below 4 years, which suggests that, as a rule, the kind of results we are getting ought to be reliable if exprience counts for anything. In some instances, however, we note that the quickly trained persons work in small hospitals not usually having the services of a pathologist for supervision of the laboratory. This is an obvious danger point.

Of the questionnaires returned, only 17 laboratories out of probably a hundred or more in the State do the Wassermann test, and this includes the State Board laboratory and those of several large cities. Apparently, most of the hospitals in the State with over 100 beds, except those belonging to the State, conduct their own Wassermanns. Many of the smaller ones do not find it practicable to do their own work and either send them to a nearby pathologist or the State Laboratory. This survey of the State conditions shows incidentally how widespread is the patronage of the State Laboratory by physicians in having free Wassermanns done. This confirms the opinion given a year ago that this test as a source of income to private pathologists is of decreasing value. Whether this carries a warning for future extension of activities of this State department is a matter for personal opinion. There is one thing certain that this Wassermann service does, and that is to furnish an accurate and well-conducted test to many small institutions that might otherwise have considerable variations in results due to unstandardized technic by more or less unsupervised technicians.

One result of this study is to show that quite a group of these workers are what the writer sometimes calls hybrid or mixed technicians in that they have other duties than strict clinical pathology. The duty most frequently reported is in X-ray work. There is a moderate demand constantly for such people and they find work usually in small hospitals. Sometimes this is thought to bring extra pay, but this survey does not show that if it is really true. The writer feels that, unless of long experience and training, the mixed technician is not apt to be as keen in either field although perhaps of considerable usefulness to the hospital needing one person to do both kinds of technic. The combination of clinical pathology with anesthesia ought not to exist, because of the belief than an anesthetic ought not be given except by physician or trained nurse. At the Medical College of Virginia, we steadfastly refuse to allow this combination either in our technicians or students. We know of a few places where the laboratory technician does some clerical work in case history taking, and a few instances where she conducts basal metabolism tests and even electro-cardiographic technic. These supplementary things are usually learned by understudy. Those hospitals which help to make up the number of small units in our more than 13,500 hospital beds in the State certainly ought to have some way of getting carefully trained and competent laboratory technical service without having to pay too much for it, or employ so many persons to do it. Here there is no relief to be had from the State Depart-

ment of Health, and the profession must develop its own workers.

The foregoing may fairly be deducted from this State-wide survey, but it is not amiss here to comment briefly on certain problems before us now. There comes to mind at once the question of the training that our laboratory technicians have had, where and how they got it, what did it include and just how reliable ought their findings to be. To answer this in detail would take too much time, but a study of our State reveals a situation rather typical of the whole country, and one function of our State Medical Society is to know the local situation fully.

Just as laboratory technicians may find work in one of three kinds of laboratories, so they may be trained in the same way by more or less unorganized apprenticeship without careful teaching. In many of the larger laboratories, this method, while uncertain as to time, usually turns out a reasonably good product because of the amount of material to work on and the experience of the supervisors. However, not all larger hospital laboratories are equipped, nor are willing or capable of undertaking general laboratory training of students. For instance, a public health laboratory does not usually do much clinical pathology although a great deal of other work. There does not seem yet to be much tendency for those other than the medical profession to take up training of technicians. There was at one hospital in the State until the past six months a short laboratory course of 4-5 months, directly under a non-medical man, although an integral part of a well conducted hospital with a capable staff. A study of its announced program, methods, length of study and supervision would cause a question about the value of its graduates. The same might be said of the Gradwohl School of Laboratory Technic in St. Louis, although such training, when closely organized and supervised, ought undoubtedly to give the student rather quick information. There is, of course, the fundamental objection to the obvious lack of practice and the handling of actual patients and material which such schools often cannot supply. We require our medical students to spend much time with patients, and often after graduation to take a practice year as an interne; why not a period of practice for laboratory technicians? Then, too, the type of student to be obtained by advertisement is just as heterogeneous as that going to the chiropractic schools. Such places usually have a medical director or fairly close medical supervision. The regular medical schools of the country and of our State have been slow to take up laboratory technic as an integral part of their teaching program, although engaged for a long time in training technicians by the apprenticesfiip method. The University of Virginia Hospital has a regular laboratory technician class, well chosen, well taught and supervised by the medical faculty. The Medical College of Virginia has just this session started such training as a part of its program of State service by giving to a limited number of well chosen persons a two year course to include all branches of general laboratory work except X-ray. The students are matriculated in the college and are taught by the faculty. This is too new to tell of its success. The Director of the State Laboratory has for some years been quietly taking in selected students in this laboratory, and in training them there has done his part in helping to see to it that laboratory technicians are a quality product rather than quantity and cheap. He and the Medical College of Virginia have been close friends in this and worked together to give a more rounded development. The few private pathologists in the State have also done a quiet but usually effective work in assisting in the training of laboratory technicians.

Perhaps the most important thought of all is now here, and concerns vitally the profession and its clientele. This is, just who controls the situation, the technicians or the physicians. It is manifest that they work with and for us, but just how far may we or do we use their results. Obviously, to a large extent we incorporate their results in the medical handling of our cases, but do we patronize, encourage, direct and supervise their results as closely as we ought. Where there is a pathologist there is usually competent supervision and control, but how about the work of the small hospital? The New York Board of Health has a system of control of laboratories by licensing those doing work of a public health nature. I do not want to see this started here, although, if the profession does not interest itself more in all phases of this growing problem and assist more intimately in its control, it might be necessary for the public health authorities to take a hand. The

State Laboratory with its efficient service is already a blessing to some small institutions and to numberless other cases, but if this State department farther enters the fringe of the practice of medicine, where is it to stop? None of us working with or employing laboratory technicians want them kept down to mere manual workers, but they must be supervised and not allowed to interpret results too much. Apparently the State situation is healthy now, but if the physicians lose grasp of their part of this system, it is easy to see how trouble will result. Already these technicians compare favorably in skill, training, hours and pay with school teachers and trained nurses, and if our medical schools will enter the training field more largely, the future welfare of our State is safe so far as the laboratory technician is concerned.

SPONTANEOUS PNEUMOTHORAX—WITH REPORT OF CASES.*

By H. B. MULHOLLAND, M. D., and
J. C. FLIPPIN, M. D.
University, Va.
From the Department of Internal Medicine, University of Virginia Hospital.

The term "spontaneous pneumothorax" has been used to designate two general groups of cases; one in which collapse of the lung occurs in individuals with definite disease of the lungs, and the other in which this condition is precipitated in apparently healthy persons. It is our intention in this paper to deal mainly with the latter type.

For the sake of clarity it might be well to enumerate the causes given for collapse of the lung. It may develop during the course of a full-blown pulmonary tuberculosis, from rupture of a cavity or tearing of an adherent pleura. During septicemia with subsequent multiple abscesses of the lung, occasionally rupture of one of these will result in a pyo-pneumothorax. Cases have been reported following the swallowing of small particles of glass, bone, etc.,[1] leading to puncture of the lung through the posterior wall of the oesophagus. A case has been reported by McGuire[2] in a patient with asthma. Scattered cases have been reported in infarction of the lung, pneumonia, and influenza. In the group with which we are especially interested the condition is thought to be brought about in one of three ways: 1. Rupture of a sub-pleural tubercle; 2. Pulling away of a pleural adhesion; 3. Rupture of an emphysematous bleb. The latter factor is probably rarely important, for we do not find this condition in patients with marked emphysema. Unusual exertion is an important predisposing factor in some of the cases.

The following group of cases have been selected from a series seen by us in the past few years:

Case I.—P. K., age 21, male, student, admitted to the University Hospital, October 10, 1923.

F. H.—Unimportant.

P. H.—The patient had always been perfectly healthy and no previous history of pulmonary infection could be obtained. He had had a slight cold two weeks before admission, with only a moderate cough, which had persisted up to the time of admission.

P. I.—Early in the morning of the 10th, while dressing, he had a sudden feeling of oppression beneath the sternum. An aching pain gradually developed and radiated out towards the left side of his chest, increasing in severity. He went to class, but found that on walking he got very short of breath, and would have to stop and sit down about every one hundred yards.

P. E.—Patient seen on the night of the 10th, lying quietly in bed on the right side. Respiration 18. Pulse 100. The apex of the heart could not be seen or palpated on the left side, and a hyper-resonant note was obtained over the cardiac area. Cardiac dullness began at the left sternal margin, and extended 1½" to the right of the sternum, where the heart sounds were most plainly heard. The whole left chest was practically immobile from apex to base, and there was a distinct bulging of that side. Fremitus was markedly decreased or absent over the whole left side. Percussion gave a tympanitic note, except beween the scapulae behind. Breath sounds were distant except close to the sternum, where there was an amphoric quality to both inspiration and expiration. Whispered and spoken voice had a distant metallic quality. The right side was clear except for emphysematous breathing.

The impression was that the patient had a complete pneumothorax involving the left side, which was confirmed by X-ray.

Course.—The patient remained in the hospital until November 20, during which time he had practically no temperature. Sputum negative for tubercle bacilli. Thirty-nine days after admission stereoscopic plates of his chest showed the left lung to be perfectly expanded, with no evidence of pathology of any kind in the chest, nor could such evidence be obtained on physical examination.

The patient remained perfectly well until the latter part of August, 1925. At this time, while surf bathing, he again experienced the symptoms as enumerated above, although not as marked. He was seen by one of us on September 1, 1925, and a diagnosis of partial pneumothorax, left side, was made, which was confirmed by X-ray. Discharged in nineteen days with no abnormal physical signs.

Again, periodic chest examinations were entirely negative. Patient readmitted March 5, 1926, having experienced same symptoms while walking up a very steep grade at the University. Partial pneumothorax, left side, with re-expansion of the lung in a short time and negative physical examination.

Subsequent to this the patient took unusual care of himself, but on April 3, 1926, he was again admitted, with much the same symptoms as on his first

*Read at the fifty-seventh annual meeting of the Medical Society of Virginia, at Norfolk, October 12-15, 1926.

admission. Physical signs of complete pneumothorax were again found on the left side, being confirmed by X-ray.

The lung did not come up as quickly as before and the patient remained in the hospital for three months. On discharge, stereoscopic plates and physical examination did not reveal any evidence of tuberculosis. He was, however, advised to temporarily discontinue his studies and take the "cure." A recent report states that he has been perfectly well and has gained twelve pounds during the summer.

Case II.—R. D., age 22, male, student, admitted March 8, 1918.

F. H.—Negative.

P. H.—Excellent, with no symptoms suggesting pulmonary tuberculosis.

P. I.—The patient was rather under the average size, and, being anxious to enter the aviation service, he had been accustomed to taking walks, during which he would expand the chest and breathe deeply in order to develop his expansion. He had just returned from an evening class, and from his deep breathing exercise, when he felt a sharp shooting pain in his right side. This pain was worse upon taking a deep breath. He felt somewhat faint, but not especially ill; indeed, he was able to go to the movies. Feeling worse about twelve o'clock midnight, he came to the hospital.

P. E.—Showed a pneumothorax, left side, confirmed by X-ray. Subsequent X-ray examination showed a suspicious right apex, with a few healed tubercles.

Course.—Patient was later accepted by the army in spite of his history and contrary to our advice. It is known that he was later sent to Denver as a tubercular patient by the Veterans Bureau.

Case III.—W. C. H., age 23, male, student admitted May 28, 1926.

F. H.—One brother died of tuberculosis.

P. H.—Good health. The patient has had a chronic cough for two years, which he attributes to cigarettes.

P. I.—Patient was seized with a sense of oppression in the left chest and aching pains across back and in left side, neck and shoulder. These were so severe that he was forced to sit down and pant for breath. Unable to rest very well except on right side. He got up, however, feeling much better, and went about his work for three days, with only slight dyspnœa and pain in left shoulder and precordium until an examination by the medical resident revealed a complete pneumothorax, left side. After the lung had re-expanded, stereoscopic plates suggested an old tuberculosis of the right upper, although no physical signs could be elicited. On the strength of these findings, he was sent to Saranac Lake.

Case IV.—W. C. P., age 28, male, salesman, seen by one of us in consultation in December, 1922.

P. H.—Had always been healthy and worked hard.

P. I.—Had been seized with substernal pain, and shortness of breath while in the bath tub.

Physical and X-ray examination showed a complete pneumothorax, left side.

Course.—The patient has had no trouble since his attack. He works hard, and his weight has remained about the same. Chest examination recently revealed no abnormality.

Case V.—J. D., age 21, male, agent, seen in consultation in 1921.

P. H.—Of no importance, except that while playing baseball the year previous to his attack he was hit in the right chest, and treated for a broken rib.

P. I.—He was seized with a sudden sub-sternal pain and dyspnœa, during a fit of hysterical laughter, the patient being one of these jolly individuals whose laugh can be heard some distance.

P. E.—Showed a pneumothorax of the right side, which was confirmed by X-ray.

Course.—Following this attack, he was easily tired, and he went out on a ranch in Wyoming to recuperate. While there he played baseball, and rustled cattle, taking the most violent exercise. He recovered his usual good health in about a month and since that time has been wrestling and swimming. He states that he now feels "100%."

Case VI.—H. F., age about 23, male, dealer, seen in consultation in February, 1926.

P. H.—Unimportant.

P. I.—Two days before examination, he developed a pain in his chest and cough. He was examined by his family physician, Dr. H. T. Nelson, who found no abnormal signs. Two days later, on account of persistent symptoms, an examination revealed a left pneumothorax, confirmed by X-ray.

Course.—Subsequent chest plates negative, and patient has been perfectly well.

Case VII.—R. B., male, age 6½ months, admitted March 5, 1926.

F. H.—Unimportant.

P. H.—Healthy up to January, 1926, when he had otitis media. His ear stopped draining in a few days, and he was discharged. He later developed a swelling behind this ear, and he was readmitted for a mastoid operation. He did nicely for a few days and then began running a septic temperature. Sinus thrombosis suspected and proved. Sinus opened and packed with iodoform gauze, and later right jugular vein ligated. The patient recovered from this operation, but several days later he went into a condition of shock, with labored respiration and cyanosis. The left side of the chest was hyper-resonant, with absence of breath sounds. Physical and X-ray examination showed a complete pneumothorax of the left side. Death occurred eighteen days after admission. Autopsy refused.

Discussion

Case I presents a rather unusual condition, a recurrent spontaneous pneumothorax over a period of three years' observation in an apparently healthy individual. Marsak and Craighead,[3] in 1917, collected forty-three cases from the literature. Hawes,[4] in 1922, reports a case first seen in 1917 with recurrent bilateral pneumothorax, and no definite evidence of tuberculosis. Our case is somewhat similar to that reported by Hamman.[5] His case, after four years' observation, with repeated attacks, had developed definite pulmonary tuberculosis, although, when first seen, there was no such evidence. Cases II and III we think may be regarded as definitely tuberculous. Cases IV and V are interesting because of negative chest findings, and a subsequent history of good health. Case VI is similar to the last two, with the exception that we did not have a long period of observation after the attack. Case VII is included, first, because of the age, although similar cases have been reported in very young children, and, secondly, for the reason that we believe it represents the type following rupture of a sub-pleural abscess. Of

course, without autopsy, this can only be a conjecture, but we believe that the other findings in this case are at least suggestive of this condition.

It might be of interest to call attention to an article by Bendove,[6] in which he states that, in his experience, amphoric breathing is heard only in spontaneous pneumothorax, and not in the artificial type unless spontaneous pneumothorax supervenes. The mode of production of this physical sign has long been a disputed question. This author believes that it is dependent upon air entering through a perforation of the lung, setting up vibrations of the air in the pleural cavity. In cases caused by a needle puncture, this sign was most intense at the point of puncture. The coin test, which is used most extensively in the diagnosis of this condition, was present, in his cases only when the pressure in the pleural cavity exceeded that of the atmosphere. He concludes, therefore, that blowing amphoric breathing and the persistence of this sign indicates a fistula, with a consequent poor prognosis; contrarily, disappearance of amphoric breathing denotes closure of the perforation, and also that diminution of the coin sound is indicative of re-expansion of the lung.

Our cases follow the general rule in that the condition is most often found in males, perhaps due to the greater stress upon the lung tissue, consequent to activity. The prognosis, as is indicated in this series, is excellent. Although aspiration of air is advocated by some authors, we did not feel that any of our cases required this procedure.

Most cases, if followed for a sufficient length of time, will develop pulmonary tuberculosis. Therefore, we believe that they should be warned to take the proper care of themselves, not only in this connection, but to guard against over exertion to prevent recurrence of the condition.

BIBLIOGRAPHY.

1. Morgan, B.: *Lancet*, 1, 656-657, March 27, 1926.
2. McGuire, H. H.: *Virginia Medical Monthly*, 51, 167-169, June, 1924.
3. Marsak and Craighead: *Am. Review Tuberculosis*, I, 109-113, 1917-1918.
4. Hawes, J. B.: *Boston Med. & Surg Jour.*, 186, 528-530, April 20, 1922.
5. Hamman, L.: *Am. Jour. Med Sciences*, 151, 229, February, 1916.
6. Bendove, R. A.: *Am. Jour. Med. Sciences*, 122, 221, August, 1926.

GENERAL

Watterson, W. H.: *U. S. Vet. Bur. Med. Bull.*, 2, 467-473, May, 1926.

Ross, S. G.: *Med. Clin. N. A.*, 7, 194-1953, May, 1924.

THE TREATMENT OF GENERAL PERITONITIS AND ALLIED CONDITIONS.*

By JULIAN L. RAWLS, M. D., F. A. C. S., Norfolk, Va.

I have included in this discussion cases in which there was a fairly general peritonitis with little attempt at limitation; cases which under ordinary circumstances should have developed general peritonitis, and cases of intestinal obstruction.

It is not my thought that I am bringing anything new or original to the treatment of these cases. I only wish to emphasize the line of treatment which has been worked out by others and which has given rather good results in our hands in a limited number of cases.

My purpose is to outline very briefly the plan of treatment we have adopted and to give you, even more briefly, a short history of some of the cases in which it has been used.

The plan of treatment consists in an absolute withholding of all fluids by mouth until the abdominal symptoms have subsided, this sometimes taking from a week to ten days; and of the giving subcutaneously, daily, of from 1,000 to 3,000 c.c. of normal saline to which has been added .33 gms. of novocaine per 1,000 c.c. to relieve pain. In the intestinal obstruction cases, where there is an increase in the urea content of the blood and a decrease in blood chlorides, the strength of the normal saline is frequently doubled, and with the addition of novocaine to the solution this does not produce any undue pain. We give frequent gastric lavage if there is any tendency to the accumulation of fluid in the stomach. We do not wait for the patient to actually begin vomiting in these cases. If there is any suspicion of a retention of fluid in the stomach, we anticipate the vomiting by the introduction of the tube. Frequently we obtain more than 1,000 c.c. of offensive, yellowish material when the patient has not vomited at all. Lavage is an absolute life-saver in these cases. If the vomiting is persistent or would require the frequent passing of a stomach tube, a duodenal tube is introduced into the stomach and fastened to the cheek with a piece of adhesive plaster. This is allowed to drain into a basin and the stomach is washed out at frequent intervals through this tube with a soda bicarbonate solution. In addition to the treatment outlined, we give each day not less than 10 gms. of glucose intravenously. Originally we

*Read before the fifty-seventh annual meeting of the Medical Society of Virginia, at Norfolk, October 12-15, 1926.

used a preparation prepared by the hospitals and given in normal saline; but there was some difficulty in getting it properly autoclaved, so for the last year we have used 10 gm. ampules put up in 20 c.c. of water and sold by reputable drug houses. The contents of the ampule is sucked up cold in a 20 c c syringe that is still warm and the fluid without dilution injected directly into the vein. We have had no trouble with it in any way and we have not had the chills and rise of temperature that so frequently followed the administration of the solution prepared in hospitals and given in larger bulk. This has some food value and also acts as a kidney stimulant.

The surgical condition in the abdomen, of course, is treated by the usual surgical means; that is the repair of perforations, the releasing of obstruction, an enterostomy when indicated, and the establishment of drainage No case has been treated expectantly, although cases have been tided over a day or two under treatment until they became better operative risks. We have made no attempt to flush out the abdomen as advocated by Murat Willis a short time ago. In some instances we have used suction to remove accumulations of fluid but no substance has been introduced into the abdominal cavity. We have contented ourselves with attempting to increase the patient's resistance in order to enable him to overcome his own infection.

The following case reports demonstrate the type of cases in which we have used this treatment, and the results obtained:

J. McC., age 52 years, admitted to the King's Daughters Hospital, March 29, 1925. He had a bullet wound of the abdomen, one of his left arm and one of the buttock. He was operated on immediately and three perforations of his lower ileum repaired. His abdomen was closed with drainage and he was given tap water by bowel and saline subcutaneously. He ran a perfectly normal temperature and pulse rate until April 5th, when he had a slight elevation of temperature due to a stitch infection. He had no vomiting following his anesthetic, and as he was taking liquids on his fourth day it was not necessary to give him any glucose. He was discharged on April 19, 1925, as cured.

L. S., age 20 years, admitted to the King's Daughters Hospital, November 15, 1925. He had a gunshot wound of the inner side of the right groin. The bullet had passed through the right side of the scrotum and entered the thigh just to the inner side of Scarpa's triangle. An X-ray showed the bullet in the pelvis. At operation seven perforations through the lumen of the bowel and four in the mesentery were repaired. There was a large amount of free blood in the abdomen and the bladder was empty. Apparently there was a perforation in the bladder behind the peritoneum since none could be found from the inside of the abdomen. The bullet was lying free in the cul-de-sac. He was given glucose intravenously and 2,000 c.c. of saline subcutaneously for several days and liquids by mouth were withheld. The morning following the operation he was leaking urine through the wound in the groin. A catheter was anchored in the bladder through the urethra. By November 20th his abdominal disturbance had entirely subsided and he was allowed fluids by mouth. His urinary leak persisted for some time but gradually stopped and he was discharged from the Hospital as cured December 24, 1925.

A. J., age 18 years, admitted to St. Vincent's Hospital on April 20, 1924. This girl was brought to the Hospital by the patrol with a bullet wound of the abdomen just above the symphysis and to the right of the midline. She had a marked rigidity all over her abdomen but was not very badly shocked. She was operated upon one hour following her injury. At operation, thirteen perforations were found in the lower ileum and one in the bladder. A resection of eighteen inches of bowel with an end to end anastomosis was done and the perforation in the bladder repaired. The abdomen was drained and a catheter introduced into the bladder hrough the urethra. The next morning her temperature was 103 and her pulse 120. By April 25th her temperature was normal and her pulse rate was 100. From then on she began to present the picture of a general peritonitis. Her temperature was 103 axillary and her pulse from 130 to 140. Gastric lavage returned a large amount of offensive yellow material. At that time the ampules of glucose were not obtainable and the glucose used was dissolved in 250 to 300 c.c. of normal saline and given intravenously. This was repeated each day with saline subcutaneously. She required gastric lavage three and four times in twenty-four hours to keep her stomach empty. As she took the tube well, a

permanent drainage through a duodenal tube was not instituted. Her symptoms of general peritonitis gradually subsided, but on May 9th she complained of pain in her right flank with tenderness and rigidity in that region, accompanied by a rise of temperature. We thought she was developing a perinephritic abscess and she was given 20 c.c. of a 1 per cent mercurochrome solution intravenously. She had a chill, her temperature went to 105.2, pulse 130, respiration 40, and she had several bowel movements during the night. Following this, she had a prompt disappearance of all of her symptoms and was discharged from the Hospital on June 2, 1924, as cured.

R. H., age 38 years, admitted to St. Vincent's Hospital, May 30, 1926. He was brought in the Hospital by the patrol a short time after having been shot with a steel jacketed bullet. He had one gun-shot wound just above the symphysis pubis. He was very drunk and practically free of symptoms of abdominal injury. He had no rigidity and his pulse rate was 96. He was operated on immediately and twenty-three perforations of his small bowel were repaired. An enterostomy was done and a tube was left in the bowel about six inches above the last perforation. The bullet left the abdomen where the peritoneum is reflected off the bladder in the cul-de-sac. It was not determined at the time if his bladder was injured. The next morning his dressing was saturated with urine and he had not voided, so a retention catheter was introduced into the bladder through the urethra. He was given from 2,000 to 3,000 c.c. of saline subcutaneously and 10 gms. of glucose intravenously each day until June 3rd. As he did not vomit at all, no gastric lavage was resorted to. On June 3rd he was allowed water by mouth and by June 7th he was on a full liquid diet. His temperature and pulse rate were normal by June 10th, and he had no subsequent rise. On June 11th the catheter was removed from the bladder and there was no further leakage of urine. The enterostomy tube was removed on June 14th, and the fistulous tract promptly closed. He was discharged from the Hospital on June 25th, 1926, as cured.

R. R., age 7 years, admitted to the King's Daughters Hospital, May 14, 1925. His illness dated from May 3rd. He had had intermittent pain in his abdomen, followed by vomiting. His condition gradually became worse and a physician was called on the day of his admission to the Hospital. His people were Christian Scientists, which probably accounts for the delay. He had a marked rigidity over his entire abdomen, with distention, a white blood count of 17,000, his pulse rate was 140 and his temperature 104. He lay on his left side with his knees flexed and seemed to be in severe pain. He was operated upon with a diagnosis of peritonitis following appendicitis. We found a complete obstruction of the small bowel. Neither the appendix nor caecum could be found. No mass of an intussusception was found. The anesthetizer reported that the boy's pulse rate was 170 and his general condition very bad. An enterostomy was hurriedly done and the tube brought out through a stab wound in the abdomen. One rubber drainage tube was inserted to the bottom of the pelvis. Nothing was given by mouth. Saline was given subcutaneously. Since his veins were small and hard to puncture and he was exceedingly hard to control, glucose and soda were given him by bowel. He had a very stormy convalescence, but by May 23rd his temperature and pulse rate were normal, he was taking food by mouth and having satisfactory bowel movements from enemas. He was discharged from the Hospital June 3, 1925, as cured. He probably had an intussusception which corrected itself after the back pressure was relieved.

C. H. B., age 45 years, admitted to the Norfolk Protestant Hospital, November 18, 1925, and discharged December 23, 1925. He was first seen at 4 A. M., complaining of intense pain in his abdomen, requiring half a grain of morphine to relieve him. The diagnosis at that time was a probable rupture of gastric ulcer. When next seen at 8 A. M., he was sitting up partially dressed and stated that his pain had radiated to his back. He had not vomited. He had a frequent desire to void but could only pass a few drops of urine at a time, and this was very painful. His picture at the second examination was one that resembled kidney colic rather than an abdominal condition. He stated that up to one week ago he had been well; since then he had had some pain in his abdomen and had vomited once five days before. His past history was negative except that he had had typhoid fever years ago and had been treated for ulcerated gastritis about ten yars ago. On his admission to the Hospital at 8 A. M., his temperature was 99, pulse 160, W. B. C. 16,000, polys 84

per cent. His urinalysis was negative, his B. P. 93/62. He had marked rigidity over his entire abdomen. An X-ray of his G. U. tract was negative for calculus. At 4 P. M., his temperature was 102.3, pulse rate 100. He had not vomited. He was operated upon with a pre-operative diagnosis of ruptured gastric or duodenal ulcer. His abdomen was found full of thick yellow fluid, but no perforation was found in either the stomach or the first portion of the duodenum. Several loops of bowel were found matted together and surrounded by the free border of the omentum. An attempt was made to find the perforation, but as the patient's condition was not good, the abdomen was drained without a prolonged search for it. He was put to bed and given 2,000 c.c. of saline under his breast and 10 gms. of glucose intravenously. The glucose was continued until November 22nd when he was allowed liquids by mouth. After about twelve days he developed a fecal fistula which was apparently due to pressure from one of the drainage tubes which had been inserted into the abdomen at the time of the operation and not from the original perforation. The tube was removed and the fecal leak promptly stopped. He did not vomit at any time and did not require a gastric lavage. His convalescence was fairly smooth. He left the Hospital on December 23, 1925, and has been examined since and found to have a reasonably firm abdominal wall.

Mrs. M. S., age 57 years, admitted to St. Vincent's Hospital, February 9, 1926, and died on March 30, 1926. She was operated on with a diagnosis of acute intestinal obstruction. At operation an intestinal obstruction was found secondary to a fairly general peritonitis, apparently arising from some pelvic condition, probably a ruptured diverticulum of the sigmoid. An enterostomy was done. She was given 3,000 c.c. of normal saline a day, and 20 c.c. of 50 per cent glucose intravenously each day until she became saturated with fluid, when the amount of saline was cut down. She had gastric lavages once or twice a day, a large amount of offensive, yellow material being returned through the tube at each washing; consequently, a duodenal tube was passed on her and anchored in place. She drained freely from this tube and the stomach was occasionally washed out through the duodenal tube without removing it. On February 15th, it slipped through into the duodenum and began to drain straight bile, so it was removed. There was no occasion for replacing it. From then on she was given liquid diet by mouth and finally soft diet. Her abdominal symptoms cleared up except that after her enterostomy tube was expelled, she continued with a fecal fistula which required dressing two or three times in the twenty-four hours. Her temperature had been normal for about two weeks and we were contemplating sending her home, to return later and have her fistula closed. She had been having normal bowel movements for some time. On March 20th, she developed a pain in her right chest with a slight cough. She had a chill during the night of the twenty-first, and on, March 22nd, her temperature went to 104, her pulse 120. There was very little increase in her respiratory rate. An X-ray of her chest showed a wedge-shaped consolidation of the upper lobe of her lung. She died on March 30, 1926, of her pulmonary infarct. Her abdominal condition apparently was progressing to complete recovery. No autopsy was obtained.

M. M., colored, age 36 years, admitted to the hospital on November 30, 1925, and discharged as cured January 22, 1926. She was operated on December 5, 1925, for uterine fibroid and tubo-ovarian abscess. Her pelvic organs were removed. A loop of small bowel was found adherent to the inflammatory mass in the pelvis. This was freed, wrapped in hot gauze, and returned to the abdomen with the intention of whipping over the raw surface after the oozing had stopped at the end of the operation. The patient did not stand the operation well and a rather hurried closure of the abdomen was made without closing over the denuded area on the bowel. She continued to vomit following her anesthesia. On December 6th, one day post-operative, the nurse charts that she vomited a large amount of yellow fluid, and that record is repeated at frequent intervals. She was given gastric lavages, fluid under her skin and glucose and soda by bowel. On December 10th, as she had gone twenty-four hours without vomiting, she was allowed a small amount of hot tea by mouth. She had no further vomiting, but began to talk at random and attempted to get out of bed. On December 12th her blood urea nitrogen was 60 mgm. per 100 c.c. of blood and her blood chloride .225 per cent, showing a definite increase in blood urea and decrease in blood chlorides. A duodenal tube was intro-

duced into the stomach and drained away a large amount of thick yellow fluid. The tube was anchored in place and dripped continuously this same offensive yellow fluid. She was given glucose intravenously and saline subcutaneously. We felt reasonably certain that she had a definite intestinal obstruction but her abdomen was perfectly flat, her temperature did not go above 99, nor her pulse rate to 100. On December 15th, a distinct peristaltic wave could be seen, which stopped always at a given point on her abdominal wall. Under a local anesthetic this spot was investigated and the piece of denuded bowel was found adherent to the abdominal wall. It was interesting to note that the free border of the omentum was between the bowel and the anterior abdominal wall. Under ordinary circumstances, we would have expected this to prevent an adhesion between the bowel and the parietal peritoneum. This patient, then, was apparently kept alive for one week with an intestinal obstruction by the use of saline subcutaneously, glucose intravenously and the constant drainage of the duodenal tube. At the second operation the bowel was freed and an enterostomy opening was made above the point of obstruction. Her recovery was uneventful.

M. P., colored, age 56 years, admitted to the Hospital June 7, 1926. On her admission, the physical findings were—a rather thin colored woman, restless and uncomfortable, tongue dry, abdomen distended and tympanitic. There was a general tenderness all over her abdomen but no marked rigidity. No mass was felt Her white blood count was 10,000, her blood urea was 35 mgm., her blood chlorides .22 per cent. The following morning, under a novocaine anesthesia, her abdomen was drained. There was a large quantity of free fluid in her abdomen, and practically all of the small intestine was distended and dark. An enterostomy was done, no attempt being made to find the site of the obstruction. She had been ill six days before her admission to the Hospital. She had a pain in her abdomen and had vomited once or twice every day since. She had had no bowel movement, and enemas had returned clear. Following her enterostomy, she was given 10 gms. of glucose intravenously for two days, and 2,000 c.c. of saline subcutaneously for three days. At the end of that time she was taking water by mouth without discomfort. Her convalescence was uneventful until June 23rd, when she developed a temperature of 102 and a pulse rate of 110. At that time she was having from one to three voluntary bowel movements a day. She began to complain of pain in her pelvis, and a pelvic examination revealed a fluctuating mass in the cul-de-sac. This was drained on June 29th, and she was discharged from the Hospital on July 18, 1926, without subsequent trouble.

Mrs. B. L., admitted to the Norfolk Protestant Hospital, May 1, 1926, with an infected, incomplete abortion. At the time of her admission, she had a temperature of 102.3 and a pulse rate of 120. She was operated upon the same day. Her physician did a D and C and she was packed. She ran a fluctuating temperature and, on May 22nd, she was operated upon the second time. This time a left tubo-ovarian abscess was drained and her appendix was removed. Following this operation, she had a very stormy convalescence, her temperature at one time going to 104.3, and her pulse to 150. She had vomiting at irregular intervals and was quite sick. I first saw her on June 12th, when a definite diagnosis of intestinal obstruction had been made by her attending physician. There was a distinct mass high up on the left side of her abdomen. Under a novocaine and gas anesthesia, this was explored and loop of small bowel was found adherent to the anterior abdominal wall. There was distended bowel above this point and collapsed bowel below it. In freeing the adhesion the bowel perforated. An enterostomy tube was introduced into the bowel through this perforation and the abdomen closed with one outside drain. She was given 300 c.c. of 10 per cent glucose intravenously for several days. She was very ill, talking at random, and voiding involuntarily. Her pulse rate was steadily above 120, and her temperature on one occasion went to 105. Her symptoms gradually subsided and she was discharged from the Hospital on July 15, 1926, with a normal temperature and pulse and her abdominal wound practically healed.

J. J., colored, age 41 years, admitted to St. Vincent's Hospital, June 4, 1925, and died July 1, 1925. When transferred to my service, a definite diagnosis of duodenal ulcer had been made on him from history and X-ray findings, and he was referred to me for operation. In view of the final results in this case, it is interesting to note that the interne's physical

examination states that the left side of his chest showed sonorous rales, probably asthmatic. My associate, Dr. B. A. Doggett, did a posterior gastroenterostomy on him and removed a chronic appendix on June 10th. On June 12th, his temperature went to 104, his respiratory rate was 60, pulse 130. From then on, all three continued elevated and he showed evidence of a definite consolidation of his left lung. On June 16th, his constant coughing caused his suture line to give away and he disemboweled himself in bed. He was taken to the operating room, the exposed bowel washed off in normal saline and returned to the abdomen. The abdomen was closed under local anesthetic without drainage. On June 17th, he began to show evidences of peritonitis. He was hiccoughing at intervals, and vomited a large amount of greenish fluid. From June 18th to June 24th he received repeated gastric lavages, 1,000 c.c. of normal saline under his skin, and 10 gms. of glucose intravenously each day. He was not allowed anything by mouth until June 24th. The glucose and hypodermoclyses were discontinued. He died on July 1st from the condition in his chest.

The autopsy showed: Left lung, external surface, covered by thickened pleura with grayish and hemorrhagic areas. The root of the lung where it is cut off is entirely necrotic, grayish and very foul smelling. Lymph glands around the lung are black. On section, the entire area of the left lung is dark gray in color and necrotic. The left pleural cavity contains about 300 c.c. of a straw colored cloudy fluid. The abdomen showed no free fluid or pus. The region of the gastroenterostomy showed some recently formed adhesions, no evidence of leakage. The opening was patent. There were dense adhesions around the duodenum and gall-bladder. The liver and pancreas were normal.

Medical Arts Building.

ETIOLOGY AND PATHOLOGY OF DISEASES OF THE GALL-BLADDER.*

By R. A. MORISON, M. D., Abingdon, Va.

In attempting this subject, I am struck with the paucity and uncertainty of information regarding the functions of the normal gall-bladder and biliary excreting organs, and of information regarding the pathological functions. On the other hand, one is struck with the detailed description of diseases, infections, parasites, congenital abnormalities, tumors and the dreadful things that are found in and about the biliary apparatus of dead people.

It is becoming more and more evident that the common term, gall-bladder disease, means disease of the bile-making organs and disturbance of the function of these organs.

It is necessary to review briefly the anatomy of the biliary system. Embryologically, the mesoblastic elements of the liver have the same origin as the diaphragm; while the hepatic duct, the glandular element, originates by an outsprouting from the duodenum. Hence, the bile passages and bile excreting elements are outgrowths and appendages of the alimentary canal.[1]

Briefly, the liver lobule is the unit of the bile excreting mechanism. The lobules are not sharply marked off from one another but anastomose in such a way that, from the arrangement of cells alone, it is not easy to say where one begins and another ends. It is difficult to determine how much of the bile duct belongs to one lobule, as the lobule tends to be a branched mass forming a mantle around the end ramifications of the bile duct. The lobule has the same relation to the portal vein and hepatic artery. A purely artificial lobule has become the time-honored lobule of the liver, chiefly because in a pig that mass is sharply outlined by fibrous tissue which is the capsule of Glisson. The great blood supply of the lobule is brought in by the portal vein; but from capillaries of the hepatic artery which unite with those of the portal where they enter among the liver cells, blood under high pressure gives impetus to the venous stream, driving it forward toward the efferent vein. The portal vein may be ligated and its blood diverted into the vena cava without causing death of the liver tissue. The hepatic artery may be ligated without effect; but if smaller branches of the portal vein are occluded where the hepatic arterioles join them, the blood supply is cut off from the liver cells and they die.

The bile ducts branch minutely so as to connect with the end of each complex cord of liver cells. The bile capillary, bounded on all sides by liver cells, forms the continuance of their lumen. The bile duct epithelium has the same origin as the liver cells, but has not become so

*Read at a meeting of the Southwestern Virginia Medical Society, at Blacksburg, Va., as a part of the Symposium on Diseases of the Gall-Bladder.

differentiated, and remains less highly organized but more hardy cells for the simpler functions of lining the ducts.[2]

The gall-bladder has the capacity normally of about 30 c.c. It is an embryonic diverticulum of the hepatic duct. Its duct joins the hepatic duct to form the ductus choledochus, or common bile duct. It joins the pancreatic duct at the papilla of Vater in 75 per cent of the cases, and enters the duodenum in its second part. In 25 per cent of the cases its entrance is separate from the pancreatic duct.[3]

The wall of the gall-bladder is composed of three coats; a peritoneal covering over the smooth muscle fibers and fibrous tissue, and this is lined by mucous membrane. The mucous membrane is in ridges or folds, and contains the mucous glands of Luschka. Of these glands, Luschka found three to twenty in the entire gall-bladder which are lined with long, cylindrical cells. The muscular coat is thin and the smooth muscle fibers are sparsely scattered, and run mainly longitudinally.[4]

The papilla of Vater is of particular interest in regard to whether or not it contains muscle fibers arranged as a sphincter. Oddi states that the sphincter is definite, and that the tone of the sphincter is equivalent to 50 m.m. of mercury. This sphincter is particularly developed in the sheep, the dog, the pig and the ox. Auster and Chron were unable in man to demonstrate a typical, distinct, anatomic sphincter at the papilla of Vater, although they did show a definite sphincteric action.

There are no ill effects noted in cogenital absence of the gall-bladder in nineteen cases reported by Gay.[5] The gall-bladder is absent in the horse, mule, ass, elephant, pigeon and rat.[6]

The innervation of the gall-bladder is not settled. Meltzer's explanation of the discharge of the contents of the gall-bladder calls for the law of contrary innervation; which means that stimulation of the papilla of Vater causes a relaxation of its sphincteric action, and at the same time a contraction of the smooth muscle fibers in the gall-bladder. Bainbridge and Dale[7] were unable to prove this experimentally, so that the actual nerve supply is a disputed point. Numerous investigators have been unable in the experimental animal to show that the gall-bladder actually contracts and dischages its bile. Auster and Chron[8] were unable to produce definite contraction of the gall-bladder by nervous stimulation. They observed that stasis of the gall-bladder contents last in normally digesting dogs up to three days, and that the gall-bladder empties itself in one week. They conclude that the filling and emptying of the gall-bladder is an irregular and slow process.

The older physiologists state that the gall-bladder is a reservoir that receives and discharges bile at periodic intervals, as required by the demands of digestion. It has been shown,[9] however, that the total liver bile in twenty-four hours is from 500 to 1,100 c.c. and that the bile from the gall-bladder is more concentrated than that from the liver. Hammarsten[10] gives the gall-bladder bile total solids eight times greater than liver bile. Rouse and McMaster[11] have shown that bile in the gall-bladder is concentrated very quickly, which has its bearing upon the formation of gall-stones from cholesterol.

Considering the normal amount of bile from the liver in twenty-four hours and the small size of the gall-bladder, it seems reasonable to deduce that the view held by the older physiologists is incorrect, and that the gall-bladder does not receive the total amount of bile from the liver since it is not large enough to hold it. The most commonly held opinion in regard to the reception and discharge of bile from the gall-bladder is that it discharges a small amount of bile at certain times of digestion, but it does not completely empty itself. The gall-bladder bile is different from the liver bile in its concentration and in the addition of mucus from the glands of Luschka.[12]

The pathological findings in disease of the gall-bladder are not usually confined to that organ alone. It is only in congenital abnormalities of the bladder, such as a total absence, the presence of more than one, septal formation, primary tumors, that we can state the disease is wholly confined to the gall-bladder. Mentzer[13] suggests that lipoid changes in the gall-bladder, "cholesterosis," is but a single and localized instance of metabolic fat disturbance occurring throughout the rest of the body. It is well known that pregnancy and obesity are ofttimes factors which are conducive to gall-bladder diseases. Usually in cholesterosis,[14] or lipoid changes in the gall-bladder, lipoid changes may be demonstrated in the liver; so that when cholesterosis is found in the gall-bladder, the pathologic process

probably had its origin in cholesteraemia. Papillomatosis[15] of the gall-bladder belongs to the cholesterosis type of disease. In this condition the deposit of cholesterin lipoid is in localized spots—the polypoid area. Essentially, the cholesterosis type of gall-bladder is non-inflammatory.[16] In Mentzer's series, 66 per cent of 612 consecutive necropsies showed grossly visible pathological changes in the gall-bladder: 75 per cent showed microscopical evidence of gall-bladder disease: 20 per cent showed gall-stones.

The primary formation of gall-stones is dependent upon stagnation of bile, a certain diathesis, mechanical causes obstructing the proper discharge of bile, chemical agents and infections. From these things cholesterin crystals may separate out of the bile and cluster about the central point until a solid, stone-like mass is formed. Generally speaking, infections and cell detritus cause the deposit of calcium in the formation of stones from such sources. In other words, when infection is responsible for a stone formation, calcium is deposited along with cholesterin and bile pigments.[17]

When gall-stones are formed, the pathological changes may be various. If the stone occludes the cystic duct completely and the ingress and egress of bile is prevented, the bile that remains is soon absorbed but the sac does not collapse, for it is full of the clear, glairy mucoid secretion from its own walls. When there are other stones in the bladder, its thickened walls shrink down about them until there is no lumen left. The whole gall-bladder becomes a mass of stones tightly bound by fibrous covering. If the stone passes into the common duct, obstructing it, jaundice results, which may remain until it is removed or ruptures and escapes. It may rupture into the peritoneal cavity, into the duodenum, colon, portal vein, biliary passages, urinary tract, peritoneal adhesions, stomach, pleura cavity, or externally through the body wall. If the stone lodge in the papilla of Vater, when this structure receives both the common duct and the pancreatic duct, retrojection of bile into the pancreatic duct may occur, which will cause acute, hemorrhagic, pancreatic necrosis with all its sequelae. Large gall-stones (the largest reported by Richter weighing 112 grams) which escape by rupture into the intestine may become impacted and cause intestinal obstruction. Great dilatation of the stomach may follow partial obstruction of the pylorus.

Persistent presence of gall-stones in one position of the gall-bladder may stir up changes in the character of the mucosa, so that a cancerous growth appears.

In the liver the changes brought about by obstruction to the bile outlets is due to rupture of the bile capillaries, by destroying the liver cells which form those walls. This is not wholly a mechanical effect, for extensive necrosis sometimes occurs.[18] Infection takes place easier in gall-bladders in which stones are present than in the normal one. The infection starts either in the glands of Luschka, or under gall-stones which press on the wall. There may result from such infection acute phlegmonous cholecystitis, sometimes with extensive ulceration of the mucosa. Occasionally, the acute form heals completely; but there is usually a recurrence of many attacks, especially when stones are present and persistent. Then, the wall of the gall-bladder becomes thickened by scar tissue formation, and we have a picture of chronic, recurrent cholecystitis.

The bacteria which infect the gall-bladder may reach this organ by way of the systemic or portal blood stream in septicemia by discharge in the liver bile, and so reach the gall-bladder or ducts. It may travel by way of the lymphatics, or as an ascending infection by way of the common duct.

The commonest infecting agents are, in the order of their frequency, the bacillus coli communis, bacillus typhosus, staphylococcus aureus, streptococcus pyogenes, staphylococcus albus, bacillus aerogines capsulatis. Typhoid bacilli have been found in the center of gall-stones forty years after the attack of typhoid fever.[30]

The commonest sites of tumor that cause obstruction in the biliary tract are, first, the common duct; second and third, the ampulla of Vater and duct of Wirsung; fourth, the duodenal surface of the papilla of Vater; fifth, the duodenal mucosa; sixth, the head of the pancreas.[19]

Carcinoma is the commonest type of primary tumor of the gall-bladder. They show metastases to the liver early and are more frequently associated with stones than not. They are more common in older people. Sarcoma

is rare, only eighteen cases having been reported to date. Small fibromata have been reported, occurring in the common duct or in the wall of the gall-bladder; these are very rare.

The occurrence of stones in a branch of the hepatic duct may cause obstruction to that duct. From this, jaundice does not occur; but the liver lobes drained by such duct degenerate and become fibrous. The unobstructed part of the liver hypertrophies and compensates for the loss sustained, and takes up the additional function of bile secretion required. From obstruction to biliary ducts caused by infection, there may develop obstructive biliary cirrhosis with liver enlargement, smooth or granular, with scars following the bile canals; but this shows no portal obstruction or ascites.

Hanot's cirrhosis, or primary, hypertrophic cirrhosis, occurs without obstruction to the bile ducts, possibly due to obscure infection.

Occasionally, one encounters a gall-bladder which is distended with fluid so that it becomes a very large bag, holding great quantities of fluid. Parasitic disease of the liver or gall ducts may occur from the entrance of parasites by way of the common duct.

Up to this point, we have considered the anatomy, gross pathology and, to a certain extent, the normal physiology, which leaves a part of the field uncovered. This may be expressed as the living pathology, or the pathological physiology, of the organs under consideration. If the bile were as easily obtained as the urine, we would have at the present day an adequate working knowledge of what it contains in the normal, healthy individual, and what it would contain under the various pathological states that we know exist.

Lyon has given great impetus to the search for the pathological constituents of the bile. His work was based upon the discovery of Meltzer[20-21] that magnesium sulphate applied to the papilla of Vater causes a discharge of bile. Lyon's application of this discovery is that when the duodenal tube is properly placed in the duodenum and magnesium sulphate, 25 per cent solution, injected, there follows a secretion of bile. The first, which he calls "A" bile, coming from the common duct; then, the discharge of "B" bile, which comes from the gall-bladder; following this, the "C" bile, which is that excreted by the liver. The microscopical study of these partitions, he claims, will determine the site of disease, and, to a certain extent, the type of disease. Things found in pathological states are the presence of epithelial cells, pus cells, mucus, clumps of bacteria and crystals.[22]

Some workers have gone so far as to claim to have recovered bacteria causing gall-bladder disease by means of the duodenal tube and cultures. However, considering the unsterile surfaces over which the duodenal tube must travel before it reaches the duodenum, it seems to stretch our credulity too far. Boardman,[23] in an extensive study, concluded that he could not rely upon cultures so made. It is by no means accepted that Lyon's A, B, C bile fractions come from the points he designates. It seems reasonable, but the difficulty has been to substantiate it experimentally. Most workers conclude that there is not sufficient contractility of the gall-bladder to completely discharge its bile.[24] It has been noted at operation upon the human that flushing the duodenum with magnesium sulphate did not cause discharge of the gall-bladder contents. Again, with diseased gall-bladder, the thickened, fibrous walls have no power of contraction.[25]

Whatever the outcome of these studies concerning bile fractions recovered by the duodenal route, there are discoveries of pathological blood composition in diseases of the biliary tract which give us a definite knowledge of the conditions existing there.

Jaundice is the most obvious expression of the body to biliary blockage. This, until recently, was thought to be due to liver disturbance only. Whipple and Hooper[26] have shown that when hemoglobin is injected into the circulating blood of dogs, it is rapidly converted into bile pigments when the liver has been eliminated from the circulation. The principal constituents of bile are the salts of bile acids, bile pigments, neutral fats, lecithin, phosphatides, cholesterol, the salts, of iron, copper, calcium and magnesia. The bile pigments are bilirubin, biliverdin, bilifuchsin, biliprasin, bilicyanin, choleprasin and choletelin.[27] Of these, we are concerned mostly with the behavior of cholesterol, calcium and bilirubin.

Hypercholesterolemia is observed in cases with gall-bladder disease and the deposit of stones in the gall-bladder tract. Rouse and McMasters[28] have shown experimentally in dogs that gall-stones frequently form in the absence of gall-bladder stasis, in the absence

of gall-bladder influence and in the absence of infection. Such stones are composed of cholesterin and calcium bilirubinate.[29] the deposit occurring about nuclei of organic debris. This is an important discovery in the formation of gall-stones because it gives an example of their formation from the drainage products of a slightly damaged liver or its biliary ducts, or of cellular debris.

Bilirubin is a normal constituent of the blood serum. This may be detected in dilutions as great as 1 to 1,500,000. Its amount in the blood serum is normally an expression of the physiological wastage of red blood corpuscles. In jaundice, its concentration is much greater in the blood pool than in the tissues.[29] The tissues take up the pigment very slowly and with difficulty. The kidneys secrete this pigment but are unable to excrete the total amount produced by the body in jaundice. There is always local intensification of jaundice where tissues are inflamed. So it is evident that where there is blockage of the bile outlet the jaundice becomes progressively worse, and is only relieved by removal of the obstruction.

The bilirubin that is normally discharged in the bile is split by the action of bacteria into urobilin, and partially absorbed by the intestinal mucosa, and returned to the liver and re-excreted into the bile. This gives a reason for the formation of white bile, which occurs in instances of gall-bladder blockage.

BIBLIOGRAPHY.

1. Piersol's Anatomy.
2. Quoted from McCallum, Text-Book of Pathology, 2nd Edition, 1922.
3. Barker, Clinical Medicine, 1922.
4. Auster & Chron: *Amer. Jour. Med. Sciences*, 1922, CLXIV, 345-60.
5. Gay, quoted by Auster & Chron: *Amer. Jour. Med. Sciences*, 1922, CLXIV.
6. Rolleston, quoted by Auster & Chron: *Amer. Jour. Med. Sciences*, 1922, CLXIV.
7. Bainbridge & Dale: *Amer. Jour. Med. Sciences*.
8. Auster & Chron: September, 1922. *Amer. Jour. Med. Sciences*.
9. Hawk, Physiological Chemistry, 1909, 2nd Edition.
10. Hammarsten's Physiological Chemistry.
11. Rouse & McMaster: *Jour. Experiment Med.*, 1921, XXXIV, 47.
13. Mentzer, Stanly H., Rochester, Minn.: Reprint from *Surg., Gyn. & Obstet.*, June, 1926, 782-93.
14. Osler, quoted by Mentzer.
15. Mentzer, Stanly H.: (See above).
16. Mentzer, Stanley H.: (See above).
17. Quoted from McCallum, Text-Book of Pathology.
18. Quoted from McCallum, Text-Book of Pathology.
19. Barker, Clinical Medicine.
20. Lyon, B. B. Vincent, Philadelphia: Tri-State Medical Association; Read at Memphis, January 26, 1926.
21. Mentzer: (See above).
22. Lyon, B. B. Vincent, Philadelphia: (See above).
23. Boardman: *Amer. Jour. Med. Sciences*, June, 1924, No. 627.
24. Chron & Auster: (See above).
25. Diamond: *Amer. Jour. Med. Sciences*, December, 1923.
26. Hooper & Whipple: *Jour. Experimental Med.*, 1913.
27. Hawk: (See above).
28. Rouse & McMasters: *Jour Experimental Med.*, XXXIX, Jan., 1924, 95.
29. Rouse & Drury: *Jour. Experimental Med.*, XXXIX, Jan., 1924, 95.
30. Lawrence, A. Pomeroy, & Sheen, J. A: *Amer. Jour. Med. Sciences*, December, 1925, 645.

DIAGNOSIS OF CHOLECYSTIC DISEASE.*

By HARRY W. BACHMAN, M. D., Bristol, Va.

With the progress being made in the diagnosis and treatment of gastro-intestinal diseases, the primary value of accurate clinical histories and physical examinations is being more fully appreciated. Perhaps in no condition is the need for this greater than in disease of the gall-bladder. Frequently its symptoms are altogether minor and escape detection unless the patient has been carefully interrogated. Frequently its symptoms are typical, or the picture of the disease may be incomplete, creating a situation in which confirmatory studies need to be made. At times the symptoms suggestive of cholecystitis are due to other pathology, such as duodenal ulcer, or chronic appendicitis, or even cardio-spasm, so that differential considerations need always to enter into the pre-operative study of the case. Most of these are conditions which can be satisfactorily demonstrated once the correct lead has been gotten from the history or physical findings, and the laboratory invoked objectively to confirm or disprove them.

At present, the diagnostic criteria of cholecystic disease are passing through a change. Critical analyses have been made showing how much symptoms alone are worth. They may be misleading when present, but more frequently advanced pathology may exist with very few symptoms. New laboratory procedures have been developed whose accuracy and relative value seem to be very great, although they are yet in the process of being further perfected. The meaning of certain gross anatomical findings, notably the "strawberry" gall-bladder, is now better understood. Formerly, skepticism was frequently expressed as to this being a pathological entity, whereas

*Read before the Southwestern Virginia Medical Society, at Blacksburg, September 10, 1926, in a symposium on "Diseases of the Gall Bladder."

now, as a result of blood chemistry studies and the study of post-operative follow-up records, it is known to be definitely pathological, though non-inflammatory, and due to changes in the fat metabolism of the body resulting in the deposition of cholesterol in the mucosal villi of the gall-bladder.[1]

It is important to bear in mind that cholecystitis is a progressive disease, the inaugural stages of which have hitherto usually escaped detection. With the exception of the solitary stone of pure cholesterol, which is non-inflammatory in origin, gall-stone formation represents a terminal stage of disease.[1] It is always preceded, except as noted, by some degree of cholecystitis, which means infection. Yet, if we look over our surgical records of the past, we find that most of our cases have been cases with stones. C. H. Mayo recently reported the incidence of stones at operation as 70 per cent.[2] This and Moynihan's comments emphasize the need for more attention to early symptoms and diagnosis, and Moynihan has recently described again his conception of this early or pre-gall-stone symptomatology.[1] He describes these symptoms as "amply sufficient to indicate the presence of cholecystitis," and has expressed them so well that I can do no better than to quote him verbatim.

"They are symptoms referred by the patient to the stomach. The complaints are of a fulness, weight, distention or oppression in the epigastrium coming, as a rule, within half or three-quarters of an hour after meals, relieved by belching, and dismissed almost on the instant by vomiting. These sensations are elicited with remarkable constancy by certain articles of diet, especially those containing greasy or acid material. There is a sensation of tightness, which, if unrelieved, may become acutely painful; by it, the patient is made restless, and from it he obtains relief by bending the body forwards, by flexing the right thigh on the abdomen, or by loosening all garments which press upon the waist. There is often a complaint of acidity or heartburn and in the act of belching there may be bitter and acid regurgitation. Many patients notice that quite suddenly there is a great gush of saliva into the mouth. While discomforts last there may be a 'catch in the breath.' When a deep forced breath is taken an acute stabbing pain may be felt on the right side, of such severity that the act of respiration is suddenly checked. Faintness, nausea, sweating of the face and neck, and a sense of great prostration are followed by vomiting. There may be a slight sensation of chilliness and of shivering, especially in the evenings; 'goose-flesh' is mentioned repeatedly in the clinical histories as a very disagreeable experience. Upon all these symptoms which exist perhaps for years a series of attacks of colic may be imposed."

Although stones may be latent, their presence until recently has been recognized mainly by the occurrence of colic, or of jaundice, or of the intermittent syndrome of Charcot. Yet colic is by no means diagnostic of stone. Blaylock,[3] reporting the Hopkins' series in 1924, showed an incidence of colic in 57 per cent of their cases without stone, and jaundice occurring with 40 per cent frequency, which was the same incidence of jaundice as in their cases of stone that had not migrated to the common duct, while intermittent chills, fever, sweats and jaundice are evidences of stone in the choledochus, and only presumptive evidence that it may have formed in the gall-bladder.

With regard to malignancy of the gall-bladder, it is not uncommon. Magonn and Renshaw,[4] reporting a series of operations from one of the large clinics, found carcinoma in only 84 out of 7,878 operations on the gall-bladder, slightly more than 1 per cent. W. J. Mayo found carcinoma in 4.6 per cent of 3,908 operative cases. It is usually associated with stone and may be suspected in a case of painless jaundice giving a previous history of colic.[1]

Acute cholecystitis manifests itself in one of two ways, depending on the patency of the cystic duct.[5] In the obstructive type severe pain in the epigastrium, nausea, fever, tenderness, rigidity and leucocytosis are to be found, although it is well known that the general symptoms of infection are often conspicuously mild. With the non-obstructive type the onset is gradual, and there is only anorexia, nausea and a little fever. Slight aching pain in the epigastrium or at the right costal margin may be noted, but colic is usually absent. It is in such cases as these that the recent laboratory diagnostic procedure of van den Bergh, presently to be described, is of great value.

The foregoing symptoms have been recognized for years, but it seems clear that they are by no means constant, as was recently shown in a pathological and clinical report by Mentzer.[6] Mentzer divided his cases clinically into (1) those that gave a history of colic, and (2) those giving a positive gastric history consisting of flatulence, belching and qualitative food dyspepsia. Pathologically, the cases were divided (1) into those showing stones, (2) those with cholesterosis or the strawberry gall-bladder, (3) papillomatosis, and (4) gross lesions. Fifty per cent of the cases of stone gave no history of biliary colic, while 87 per cent of the cholesterosis cases, 20 per cent of the papillomatosis cases and 36 per cent of gross lesions gave negative gastric histories. Yet, at necropsy every one of these

cases presented evidence which the pathologist recognizes as evidence of disease, and which the surgeon, knowing that pathology and its secondary effects on the liver, pancreas, and duodenum, would deem sufficient to justify his intervention. It becomes pertinent, then, to ask how these latent cases can be demonstrated clinically. Undoubtedly the most important contribution to this subject is the work of Graham Cole and Copher, first reported in 1924, and known today as the Graham test, or as cholecystography. It is a development of the Rowntree-Rosenthal test of liver function by the use of phenol-tetrachlorphenolphthalein. This substance was found by Graham and his associates to cause the bile to throw a faint shadow. Subsequently, they substituted an atom of sodium for the phenol, and bromine or iodine for the halogen, thus producing a substance that is more nearly radio-opaque than the original, and called the new product sodium-tetraiodo or tetrabromphenolphthalein. Administration of early preparations of the salt, particularly the iodo salt, frequently caused unpleasant reactions, such as nausea, vomiting, diarrhoea and headache, but as greater purity of the salt was obtained, these reactions became less frequent. At the outset the salt was given only intravenously, but subsequent experience has shown that oral administration is usually adequate, so that at present the intravenous route is used chiefly when the finding may be regarded as questionable after oral administration. Furthermore, as greater purity has been achieved, the iodine salt, having a higher atomic weight and therefore casting a denser shadow, is widely replacing the bromine salt. The dosage of the iodine salt for oral administration is estimated at 60 milligrams per kilo bodyweight, and for intravenous administration a fixed dose of 3.5 grams is used. For the bromine salt sufficient concentration in the bile is obtained by 100 milligrams per kilo given orally, while intravenously 4 grams is sufficient.

In my own work, using the oral route, the best shadows have been obtained with the following procedure: The evening before the chemical is to be ingested, a mild laxative dose of milk of magnesia is given. The following day the diet is restricted to liquids. With the supper, one-fourth of the dose in capsules is taken at the beginning of the meal, one-fourth at the middle, one-fourth at the end and the last fourth is taken about half an hour after supper. The patient immediately retires and is instructed to lie on the right side and take water freely. About three hours after supper 30 to 40 grains of sodium bicarbonate is given. The next day, fourteen hours after ingestion, the patient reports without breakfast for the first roentgenogram of the series.

Dr. N. S. Peters, our roentgenologist, tells me he uses a Buckey diaphragm, using a 17x 22 duplitized film with double intensifying screens. The gap is five inches, milliamperes 25, distance 27 inches, time 6 to 8 seconds, using a medium focus radiator tube. If no shadow at all is obtained, the patient is dismissed after making careful search on the film for the capsules to make sure they do not remain unabsorbed. If a shadow is present, further information relating to the physiological efficiency of the gall-bladder to empty itself, whether this be by way of the cystic duct or by absorption of bile through the lymphatics into the liver, may be obtained. For this purpose the patient is instructed to take a breakfast containing toast, butter, tea and 250 c.c. of cream, and to report four hours after the first for the second film. Normally, the gall-bladder at this time will cast a shadow somewhat smaller and usually less dense than that seen at the fourteen hour film. The interpretation of the findings is based on mechanical and absorptive functions of the gall-bladder. The normal gall-bladder admits bile freely by way of the cystic duct. It is also known through the work of Rous and McMaster that bile is concentrated in the gall-bladder. The normal gall-bladder admitting radio-opaque bile therefore casts a dense homogeneous shadow. The eighteen and twenty-four films normally show a shadow of progressively decreasing density. The pathological gall-bladder most commonly fails to throw any shadow.[7] This is due to some impediment in the cystic duct to the entrance of bile. This may be an impacted stone, edema, inspissated bile, spasm, or stricture. When stones are present, the shadow may be mottled, or crescentic filling defects may be noted. Failure of the shadow progressively to diminish in size and intensity is regarded by Graham as evidence of cholecystic disease, since this is a criterion of its ability to empty itself or to concentrate bile. As to the value of this test, numerous reports are available in the literature. Milliken and Whitaker[8] state that cholecystography has afforded correct diag-

noses in 95 per cent of proved cases, as compared with 65 per cent where the clinical impression alone was used. Moore,[9] in the *American Journal of Roentgenology*, reports correct results in 92.5 per cent of 156 cases, and states that it is more reliable than inspection and palpation at operation. Graham[10] and his associates report correct results in 92.25 per cent of 80 cases; Zink[12] reports 96 per cent correct in 131 cases. Nothing but favorable reports have been found, yet it seems only rational that we should have full regard for the more time-honored clinical criteria, and interpret with conservatism the results of this relatively recent diagnostic innovation.

Another useful procedure in identifying certain cases of cholecystitis is the van den Bergh diazo reaction, or icterus index. In as much as this deals with the subject of bilirubinemia, and for that reason covers a wide range of pathology, only sufficient explanation of it will be here attempted as to indicate its clinical application in cholecystitis. It is now generally an accepted fact that some degree of hepatitis accompanies a large percentage of cases of cholecystitis. The liver is an organ having a large factor of safety, and one of its chief functions is the excretion of bile. One of the constituents of bile is bilirubin, which is derived through the blood stream from destruction of erythrocytes, and is normally excreted by the polygonal cells of the liver into the bile capillaries. Therefore, failure of these polygonal cells to excrete a normal amount results in increased values for bilirubin in the blood. The same increase likewise results from any obstruction of the bile passages, whether that be in the capillaries or in the extrahepatic ducts. Van den Bergh's method affords the most accurate means now available for the quantitative estimation of the bilirubin content of the blood. Briefly, his method may be stated as follows: On the addition of Ehrlich's diazo reagent to the serum, in the presence of obstructive jaundice a purple color appears immediately. This is called the "direct reaction," and McNee has suggested that it is diagnostic of obstructive jaundice. If the color appears slowly, it is known as the "delayed" or "biphasic" reaction. This is seen particularly in cases of toxic jaundice. On the addition of alcohol, a rose color is produced, due to the formation of azobilirubin. The amount of azobilirubin can be estimated calorimetrically and from this the amount of bilirubin in the blood serum calculated. Normal values are from .5 to 2.0 milligrams per 100 c.c. of blood.

In obstructive jaundice, the kidney will not allow bilirubin to pass into the urine until 3 to 5 milligrams per 100 c.c. is present in the serum, and a three to five fold increase is necessary for the production of clinically demonstrable jaundice. Lying between the point of normal bilirubin and clinical icterus is the condition known as a latent jaundice, a condition which may be encountered in cholecystitis. Judd has made the statement that latent jaundice has more clinical significance than we realize. While the quantitative estimation of bilirubin in the serum is mainly a test of liver function, if we can demonstrate the absence of a toxic or haemolytic factor in the production of excessive values, it would seem that in this we have a means of obtaining valuable evidence of the presence or absence of disease in the biliary excretory apparatus.

The usefulness of gastric analysis can be summarized in a few words. It is frequently of no value. The finding of an anacidity, or of low acidity, is suggestive but not diagnostic. About 40 per cent of cases of cholecystitis give low values, 50 per cent give normal values, and 10 per cent increased values.[13]

BIBLIOGRAPHY.

1. Moynihan:—Abdominal Operations, Saunders, 1926.
2. C. H. Mayo:—*Ann. Surg.*, 1925, LXXXI, 955.
3. Blaylock:—*Bul. J. H. H.*, 1924, 391.
4. Magoun and Renshaw:—*Ann. Surg.*, 1921, LXXIV, 700.
5. Wilkie:—*B. M. J.*, 1924, II, 163.
6. Mentzer:—*S. G. O.*, XLII, 782.
7. Carman:—Collected Papers, Mayo Clinic, 1925, 139.
8. Milliken & Whitaker:—*S. G. O.*, XL, 646.
9. Moore:—*Am. J. Roent.*, 1925, XIII, 515.
10. Graham:—*Am. J. Roent.*, 1924, XIV, 487.
11. Cole & Copher:—*Internat. Ab. Surg.*, 1926, 1.
12. Zink, cit. by Cole & Copher.
13. Hartman, cit. by Riesman:—*Surg. Clin. N. A.*, 1925, V, 1591.

Reynolds Arcade Building.

MISTAKEN DIAGNOSES OF INTESTINAL PARASITES.*

By R. H. HARRINGTON, M. D., Grant, Va.

One of the most common ailments brought to the general practitioner, especially in country districts, is intestinal parasites, chiefly ascaris lumbricoides, commonly called by the laity, "worms." In a series of fifty-one cases seen, only two will be mentioned, and then only from the standpoint of erroneous diagnosis.

*Read before the Southwestern Virginia Medical Society, at Blacksburg, Va., September 9-10, 1926.

Case 1.—E. T., age 11, white male, came to office with diagnosis of pulmonary tuberculosis. History of persistent cough for three weeks, with sudden onset, no sputum, anorexia, loss of fifteen pounds weight in past four months, no night sweats, no chills or fever. Family history negative, normal temperature, accelerated pulse, very pale. Lungs showed no pathology on examination. Heart normal, slight general abdominal tenderness; otherwise negative. A history of worms two years previously. Upon administration of oil of chenopodium, patient passed sixty worms. Ten days later cough had entirely disappeared, appetite increased, and stool examination was negative for intestinal parasite ova. Two years later patient reported well, no return of any symptoms, and above the average for his age.

Case 2.—H. H., white male, age 17, came to office with diagnosis of pulmonary tuberculosis. History of cough, paroxysmal in character, of two weeks' duration, nausea with vomiting, slight elevation of afternoon temperature, no history of worms. Anorexia, loss of ten pounds weight in two weeks, occasionally grinding of teeth at night, skin pale, bluish cast around mouth and cheeks highly colored. Patient coughing every two to ten minutes. Head examination negative. Lungs free from pathology, with exception of some slight moist rales heard over the bronchus. Heart showed a functional murmur at apex (mitral). Abdomen tender and sore in epigastrium, reflexes exaggerated; no other pathology found. Upon administration of calomel and santonin patient passed sixteen worms. Ten days later cough was entirely relieved, appetite good, weight increased two pounds, color normal, stool examination negative for parasitic ova. One year later patient in good health with no return of any symptoms.

Both cases were treated on clinical diagnosis rather than wait for stool examination on account of severity of symptoms. The diagnosis in Case No. 1 did not seem warranted in view of negative chest findings, and diagnosis of intestinal parasites was made chiefly on loss of weight over a period of four months without any chest involvement, coupled with history of previous parasitic infection. Case No. 2 was more nearly clear-cut, and the clinical diagnosis of intestinal parasites much less complicated.

These two cases point out several things:

First: On account of severity of symptoms, treatment must often be instituted on clinical findings before laboratory reports can be made available as corroboratory evidence of the correctness of the clinical diagnosis.

Second: A stool examination is always indicated after treatment, and should be done before treatment where possible to do so, especially if there is any question as to diagnosis. As proof of this, I would like to quote a few figures from Metcalf, of the Children's Memorial Clinic, of Richmond, Va. He found that approximately 8.3 per cent of all stools examined showed ascaris lumbricoides; also that the greatest number positive were found in early spring and late fall.

Third: Coughs in children, who have negative chest or nearly so, should not be diagnosed as pre-tubercular and tubercular without first ruling out ascaris lumbricoides and other intestinal parasites, because cough thought to be of pulmonary origin may possibly be reflex conditions caused by irritation of the gastro-intestinal mucous membranes by intestinal parasites.

THE KIELLAND FORCEPS.*

By M. PIERCE RUCKER, M. D., Richmond, Va.

I am bringing the question of the Kielland forceps up for discussion in this Society, not because it is new, although the invited guest of the State Society last year in speaking on "The Forceps Operation" made no mention of this instrument, but because there are at least three instruments owned by our members and I am interested to know the results that have been obtained with them. Since Kielland's first communication in 1916, there has been a great deal in the German literature *pro* and *con*. At first, the opinion was divided as to whether the new forceps were superior to the Naegele forceps. Next, the opinion seemed to be that it was a superior instrument but that its use should be restricted to specialists. It is now pretty generally agreed that it is the best instrument for universal use. At the meeting of the Gynecological Society in Breslau last year, the Kielland forceps were again under discussion, and Baumm advocated the teaching of its use to medical students.

The literature in English is very meagre, possibly because it has been difficult to procure the forceps.† It was not until the latter part of 1923 that I was able to purchase a pair, al-

*Read before the Manchester Medical Society, November 2, 1926.

†The instrument is patented in Germany, but not in this country. In the United States the name "Kielland," as written by himself, is protected by Trade-Mark No. 205,784 of November 17, 1925.

though I made inquiry of all the instrument exhibitors at every medical convention that I attended. Greenhill has an excellent review of the literature, and Jarcho, in the July, 1925, issue of the *American Journal of Obstetrics and Gynecology*, reports his experiences with the new instrument. Except two discussions before the Philadelphia Society in 1925 and 1926, there is no other mention of the forceps in American journals.

Th new forceps differ from the classical models; first, in the almost complete absence of pelvic curve; and, second, in having no lock in the generally accepted sense. These modifications allow a cephalic application of the forceps even when the head is lying tranversely, and, what is more important, the forceps stay put. I have never been able to make a Tarnier, a Simpson, an Elliott or a Hodge forceps stay on a transverse head. Invariably they adjust themselves to the pelvis rather than to the fetal head and, after a few tractions, I would have an oblique application of the forceps, no matter how correctly I had applied them.

The most radical difference, however, is in the method of application. It was only after several readings of Kielland's directions that I screwed up nerve enough to try it, and even then I had visions of punctured lower uterine segments and loops of cord caught by the revolving blade. Kielland emphasizes the importance of an accurate diagnosis of the position. The forceps are held before the patient in the position they should be in when applied, with the front of the forceps (indicated by a little knob on each blade) directed towards the back of the baby's head. Two fingers are now introduced into the vagina and are hooked under the anterior lip of the cervix. The anterior blade, with the concavity of the cephalic curve upwards, is introduced between the fingers and the cervix very much as you would introduce an urethral sound. When introduced properly, the beak can be felt through the anterior abdominal wall several inches above the symphysis. The blade is now gently turned on its long axis (the round part of the shank resting on the fetal head) towards the side on which the small knob is located through an arc of 180°. The concavity of the blade adjusts itself to the side of the fetal head. The handle should lie in the mid-line. The posterior blade is now introduced under the guidance of two fingers between the head and the posterior lip of the cervix. The shank should fall into apposition with that of the anterior blade without difficulty or without any rotation. The sagittal suture should run perpendicularly to the plane of the forceps. Traction is made in the direction of the handles. It should be emphasized that no force should be used in the introduction of the forceps or in the rotation of the anterior blade. Much less force is needed for extraction than is the case with ordinary forceps. Sometime ago I attempted to deliver a head in deep transverse arrest in a funnel pelvis with a pair of Tarnier forceps, but was unable to do so without using more force than was warranted. I applied the Kielland forceps and the extraction was surprisingly easy. With both forceps I was making traction in the proper direction, but the Kielland forceps grasped the baby's cheeks and did not interfere with flexion of the head, whereas the Tarnier forceps had a firm grasp of the sides of the head at first, and later shifted to an oblique application. At no time was the head freely movable in its grasp.

Some of you may remember my reading a paper before this Society five years ago, in which I tried to demonstrate the philosophy of forceps extraction by pulling a cork out of the neck of a bottle with two wires slightly bent at their tips. If you got the two wires on opposite sides of the cork with the bent tips beyond the cork, there was no need of fastening the wires together. The neck of the bottle kept the wires in place and all you had to do was to make traction. The Kielland forceps act on this principle. The pelvis keeps the two blades in place, and their light grasp on the baby's cheeks permits the head to adjust itself to the pelvic canal.

In the past three years I have learned to depend more and more upon the Kielland forceps, until now I rarely use any other kind. It is the only forceps that can compete with Potter's version. For the delivery of the head in deep transverse arrest in a funnel pelvis it is the ideal instrument, especially with the patient under sacral anesthesia. It is the preferable instrument for all mid-forceps cases, and is just as satisfactory as any other model for low forceps work. The technic for low forceps application is the same as with any other forceps. For the delivery of the after-coming head, its straightness is an advantage, as the baby's body is less in the way. The

only place any other forceps are preferable, is in the low Cesarean section. Here a forceps with a lock and crossed blades are needed to lift the head out because there are no bony walls to hold the blades in place.

REFERENCES.

Averett, Leonard: Meeting of the Obstetrical Society of Philadelphia, *Am. J. Obst. & Gynec.*, 9:410, 1925.

Baumm, Hans: Ueber Nachteile und Vorteile der Kiellandzange, *Zentralbl. f. Gynak.*, 50: 1968, 1926.

Greenhill, J. P.: The Kielland Forceps, *Am. J. Obst. & Gynec.*, 7:349, 1924.

Hillis, David S.: The Obstetrical Forceps Operation, *Virginia Med. Monthly*, 52:550, 1925.

Jarcho, Julius: The Kielland Obstetrical Forceps and Its Application, *Am. J. Obst. & Gynec.*, 10:35, 1925.

Kielland, Chr.: Die Anlegung der Kiellandschen Zange, *Monatschr. f. Geburtsh. u. Gynak.*, 43:48, 1916.

Schumann, Edward A.: Observations upon the Use of the Kielland Forceps, *Am. J. Obst. & Gynec.* 11:525, 1926.

Medical Arts Building.

ESSENTIAL THROMBOCYTOPENIA (PURPURA HEMORRHAGICA).

Report of a Case with Splenectomy.*

By A. B. HODGES, M. D., Norfolk, Va.

The purpose of this communication is to add another case to the small number of reported cases of essential thrombocytopenia in which the spleen has been removed. As the disease is a relatively rare one, only in this way can the value of the operative procedure be estimated. Then, too, accumulated data may give us some information concerning the many obscure factors in the disease process itself.

In the year 1731 Werlhof differentiated purpura hemorrhagica from a large group of diseases in which purpura occurred, and the disease was known as morbus maculosus werlhofii for many years.

In the year 1887 Denys observed in a case of purpura that the blood platelets, which had been described by Hayem and Bizzozero, were entirely missing. Two years later, Hayem substantiated this observation and was the first to note a reduction of the actual platelet counts. In 1915 E. Frank arrived at the conclusion that the blood platelets are always reduced in purpura hemorrhagica and proposed the name "essential thrombopenia." In 1920 Eppinger suggested that essential thrombocytopenia was a better term as directly pointing to reduction of the platelets rather than the substance thrombin. Hayem noted the fact that there is an absence of clot retraction in the disease, and Duke in 1912 emphasized the prolonged bleeding time in the presence of a normal coagulation time.

Due to the large amount of work that has been done on the subject, essential thrombocytopenia is now generally considered a definite disease entity, and is characterized by the following main features:

1. Diminution of the blood platelets. The average number of platelets in normal blood is between 200,000 and 300,000. The platelets vary from none to 100,000 in this disease, and the average is about 30,000, but at times the number may approach the normal figure.

2. Preservation of the normal coagulation time of the blood.

3. Prolongation of bleeding time. The normal time is from one to three minutes, but in this disease it is usually prolonged from ten minutes to an hour or more.

4. Some change in the capillary activity resulting in a hemorrhagic tendency. This disturbance in the capillary function can be demonstrated by what is known as the capillary resistance test. A tourniquet placed on the arm sufficiently tight to prevent the venous return without obliterating the pulse is followed in a few minutes by the appearance of petechiae.

5. Failure of clot retraction. Normally the clot retracts, pressing out the serum in an hour, but in this disease it may be delayed twenty-four hours, and very often there is none at all.

Cases of essential thrombocytopenia may be divided into acute and chronic. Of the chronic types there are two sub-groups: continuous and intermittent. It is most common in children and young adults, and a greater proportion of females are affected than males. In looking up the cases in the literature that have been operated upon, nine were male and twenty-three were females; and the age of the onset of the disease varied from two and one-half years to forty-five years, with an average of thirteen years.

The disease is characterized clinically by hemorrhages into the skin and from the mucous membranes. The skin lesion may be only a diffuse crop of petechiae localized to certain body surfaces or scattered widely over the body. The lesion may be small or large and sometimes definite hematomata develop.

*Read before the Norfolk County Medical Society, 1925.

The patients bruise easily. Of bleeding from mucous membranes, epistaxis is probably most common. Uterine bleeding is very common in females. Bleeding from gums and gastro-intestinal tract is observed. Hemoptysis is rare. Occasionally a cerebral hemorrhage will occur, giving rise to hemiplegia, convulsions, or other symptoms referable to the central nervous system. Following the bleeding, an anaemia of the secondary type develops, and the patient becomes pale and suffers from the unpleasant symptoms of anaemia. The spleen may or may not be palpable. Fever is sometimes present, particularly in the severe cases. The leucocytes are usually normal in number, although occasionally they are moderately increased with a slight polymorphonuclear leucocytosis.

If these points are kept in mind, the diagnosis of this disease offers little difficulty except in its acute form. The acute form must be differentiated from acute aplastic anaemia, the acute leukaemias, and the acute infectious diseases. This is often very difficult.

The etiology of the disease is unknown. Theories as to its pathogenesis have been many and interesting. Letzerich, in 1884, isolated a bacillus which he believed to be the cause of purpura hemorrhagica, and with this organism he was able to produce in animals hemorrhages and other evidences of the disease. He considered the condition due to a chronic infection.

In the disease the platelets, on one hand, and the capillaries on the other, seem to be principally involved. It has been definitely shown by Wright that the platelets originate from the megacaryocytes. Normally in extra-uterine life the megacaryocytes occur only in the bone marrow. Conditions which activate the bone marrow increase the platelet count and, *vice versa*, inhibition of the marrow decreases the platelet count. Howell states that the platelets furnish a substance which hastens coagulation, and he calls this substance thromboplastic substance or thromboplastin. Considering the platelets alone, it follows then that there are a number of theoretical possibilities:

1. That platelets are not formed in a normal quantity. This would imply that there is either an aplastic condition, or an inhibition of the megacaryocytic function. When the bone marrow is examined in these cases we do not find a diminished number of megacaryocytes, but, on the contrary, we find an increased number of these cells, and sometimes these cells are found in the spleen and other places where hematogenesis takes place in foetal life. Frank believes that the platelet-producing function of the megacaryocytes is inhibited by some substance liberated by the spleen; hence, the decrease in the number of platelets in the circulating blood. If we consider this for a moment, it seems almost impossible for a substance to inhibit the activity of one type of cell in the bone marrow and not affect the other cells. Then, too, it is difficult on this hypothesis to explain the very rapid increase in the number of platelets in the circulating blood following splenectomy. Usually in essential thrombocytopenia many abnormally large platelets are found and these large types indicate stimulation of the megacaryocytes.

Then, again, the coagulation time in essential thrombocytopenia is normal. Now, the only formed element which takes an active part in coagulation is the platelet, which produces a thromboplastic substance. If the platelets were formed in normal numbers, there would be a deficiency of thromboplastic substance and prolonged coagulation, a condition which does not exist.

2. That platelets are formed in normal numbers but that they are destroyed somewhere in the body, either by an abnormal activity of an organ or by an antiplatelet serum.

Kaznelson and many other investigators believe that the platelets are destroyed by the reticulo-endothelial system, the greatest number by the spleen or through some activity of the spleen. He bases his reasoning on the frequent occurrence of splenomegaly in the disease; the observation that the platelets are increased in normal animals following splenectomy; that splenectomy benefits a large percentage of the patients suffering from the disease; and that in a case of his which was operated upon, platelets were found in the spleen in large numbers.

In support of this theory, it has been shown that in essential thrombocytopenia the blood in the splenic veins contains fewer platelets than the blood in the splenic arteries. However, this means very little, for normally venous blood in general contains fewer platelets than arterial blood.

This hypothesis sounds very plausible; but how can it account for those cases which, after splenectomy, are cured so far as a tendency

to hemorrhage is concerned, but which continue to have a low platelet count? Many authors state that in essential thrombocytopenia hemorrhagic manifestations come into evidence when the platelets fall below 60,000; but there are cases on record that, after operation, have had no bleeding, no purpura, and a normal bleeding time in spite of a platelet count well below 60,000.

Recognizing that there was a constant association of diminished platelets and essential thrombocytopenia, attempts have been made to produce the disease experimentally. Cole, in 1907, produced an antiplatelet serum by repeated injections of foreign blood platelets. LeSourd and Pagniez injected animals intravenously with antiplatelet serum and were able to produce a condition in the blood closely resembling that found in essential thrombocytopenia. There was a rapid disappearance of platelets; the blood clotted in normal time; and the clot failed to retract. They had previously shown that retraction of the clot depended on an abundance of platelets. Lee and Robertson injected guinea pigs with antiplatelet serum subcutaneously, intraperitoneally, and directly into the heart. Three animals were given subcutaneous injections of 1 c.c. each. All developed purpuric spots. The bleeding time increased from two minutes to fifty minutes, and the platelet count dropped from 300,000 to 10,000 in twenty-four hours.

These experiments show that an antiplatelet serum can be produced in animals, and that this serum can produce a type of purpura in animals that resembles essential thrombocytopenia in man. Beyond this, it seems to me, we cannot go, for it is impossible to demonstrate the presence of any antiplatelet serum in the blood of patients suffering from the disease.

Giffin and Holloway, from the Mayo Clinic, suggest that essential thrombocytopenia is only a severe form of simple purpura; that it is usually secondary to localized infection; and that in some way chemical toxins are formed as a result of bacterial action which affect vascular tissue and the vascular elements, destroying the platelets and producing destructive changes in the capillary walls, allowing blood to pass out into the tissues. They believe also that this toxic substance is formed by the reticulo-endothelial system of which the spleen is the major organ; and that the toxic agent which acts on the vessels and blood itself is not the original organism or its product, which initiated the pathologic process, but rather a resulting secondary product, perhaps an abortive substance designed originally to protect.

This hypothesis is entirely too fanciful. There is no reason for thinking that essential thrombocytopenia is in any way associated with foci of infection; or that there is a circulating toxin which causes a destruction of blood platelets, and a degeneration of the capillary walls. Most investigators today feel that purpura simplex is quite distinct from essential thrombocytopenia and that the only factor the two conditions have in common is the tendency to purpura.

Now, when we come to consider the capillaries in this disease, we find several hypotheses. Definite changes in the capillary walls have been described, but the majority of investigators have failed to demonstrate these changes. We know that capillary hemorrhage is normally controlled by the inherent contractility of the vessels and by the formation of a platelet thrombus. Frank believes that one of the normal functions of the circulating platelets is to prevent the diapedesis of the red cells between the endothelial cells of the capillaries. Janeway thought that the blood platelets participate in the control of vascular contractility and that this contractility reinforces the protective mechanism against the capillary hemorrhage. We do know that the platelets are reduced in essential thrombocytopenia and we can see why, when once a vessel is ruptured, the bleeding tends to continue due to the delay in clot formation; but are we so sure of the role of the platelets in preventing diapedesis of the red blood cells, and do we know that the platelets are associated with vascular contractility?

In 1923 Brill and Rosenthal reported two cases of essential thrombocytopenia with splenectomy. Both cases recovered from the disease, in spite of the fact that in one there was only a slight increase in the number of platelets, 50,000, and in the other the platelets, although they rose to 295,000, only remained increased for six days, and in eleven days fell to 60,000, and after that fell further and never rose above 30,000.

These two cases led them to seek a further explanation for the disease, as neither the theory of megacaryocyte inhibition nor that of a destructive action of the spleen could explain the findings in these two patients.

They formulated the hypothesis that the spleen exerts an influence on two important properties of the blood platelets; namely, the one which produces clot retraction, and the property of the platelets to agglutinate to form thrombi.

This, however, is a mere statement; and no explanation is offered as to how this is brought about, or, when once brought about, how it can explain the many factors present in the disease, such as the decrease in the number of platelets and the change in the capillary walls which allows the escape of blood into the tissues.

Report of Case

History.—A white school girl, aged 15, was first seen November 13, 1924. In October, 1923, she first noticed many small red spots scattered diffusely over her body. These continued to appear, at times more numerous than at other times, but she was never without them. In March, 1924, she menstruated for the first time. The bleeding continued for one month, a large quantity of blood was lost and the patient became very weak. She received one transfusion of 500 c.c. of whole blood and the bleeding from the uterus ceased. Five weeks later she menstruated again, the period was prolonged, and she lost quite a quantity of blood. After this her periods occurred every three weeks with the loss of much blood. In the first part of November, 1924, after a prolonged menstrual period, she was transfused for the second time.

The family history and the past history were negative. There were no bleeders in the family. The patient had been quite well with the exception of the usual childhood diseases. Her appendix and tonsils had been removed several years before. The convalescence was uneventful, and there were no hemorrhages during or following the operations.

Physical Examination.—The patient was an undernourished, poorly developed nervous child of 15. The skin and mucous membranes were a little pale. Over the chest and extending into the axillae were many small petechiae, some old and some fresh. Scattered over the back, the shoulders, arms, and abdomen were a few such hemorrhages. Over the extensor surfaces of both feet were large ecchymoses, about 3 cm. in diameter. There was also a large ecchymosis over the external malleolus of the right foot. A few small petechial hemorrhages were seen over the hard and soft palates, and about the gums. There was no bleeding from the gums and no hemorrhages in the eye-grounds. The tonsils had been removed. The heart was 90 per minute and no murmurs were heard. The spleen and liver were not palpable. There was no bleeding from the vagina.

Blood.—R. B. C. 3,970,000. Hmb. 55 per cent. W. B. C. 6,950. The differential formula was normal. The R. B. C. showed changes characteristic of a mild secondary anaemia. One normoblast was seen. The platelets numbered 40,000. The coagulation time was 9 minutes; the bleeding time 12 minutes; and the clot was non-retractile in 24 hours. The tourniquet test was positive. The urine showed no R. B. C., and there was no blood in stools.

Course.—After spending a short time in the hospital, the patient was allowed to return home.

December 10, 1924.—General condition unchanged. Many petechiae and a few ecchymoses. Hmb. 60 per cent. R. B. C. 3,900,000. Platelets 20,000.

January 5, 1925.—Patient had gained 3 lbs. Color better. Petechiae persisted. Her menstrual period lasted four days, with moderate bleeding. Hmb. 68 per cent. R. B. C. 4,000,000. Platelets 32,000.

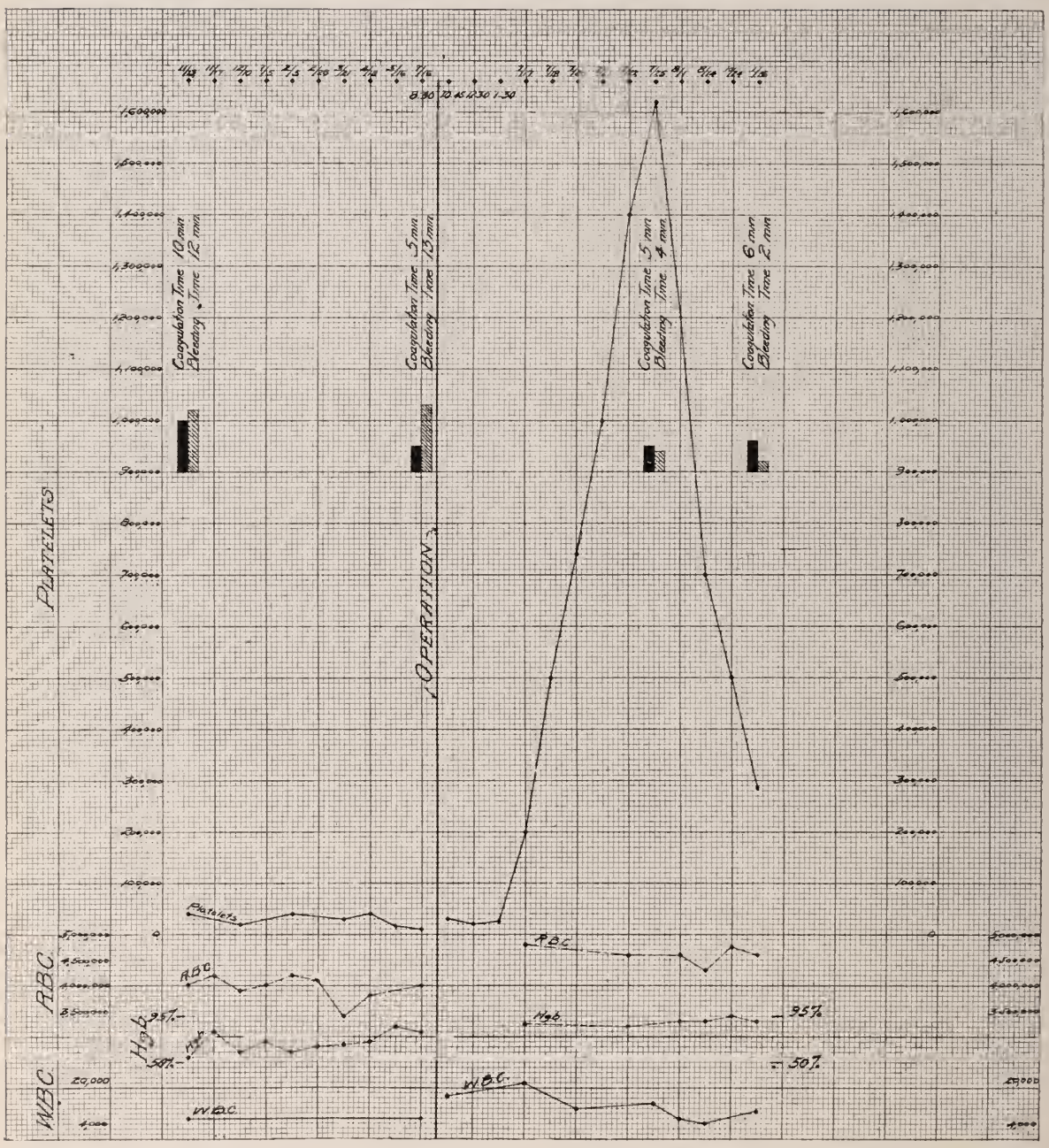
February 5, 1925.—Condition unchanged. Platelets 45,000.

March 21, 1925.—Condition the same. R. B. C. 3,460,000. Hmb. 67 per cent. Platelets 32,000.

May 16, 1925.—Patient had been going to school regularly for about two months. Menstruation not excessive. Petechiae and ecchymoses present. Hmb. 85 per cent. R. B. C. 5,000,000. Platelets 16,000.

On July 15, 1925, she entered the hospital for operation. The physical condition was essentially the same as when first seen. The spleen was not palpable. Hmb. 80 per cent. R. B. C. 4,000,000. Platelets 12,000.

The patient's spleen was removed by Dr. Gwathmey at 9:45 on the morning of July 16, 1925. The platelets before operation numbered 13,000; the bleeding time was 13 minutes; and the coagulation time 5 minutes. The tourniquet test was positive. The W. B. C. were 5,750, with a normal differential formula. The clot was non-retractile. The spleen was removed with ease. There were a few adhesions over the upper pole. The spleen weighed



70 gm., which was considered to be a little enlarged for the patient's age and weight.

One hour after splenectomy the platelets had increased from 13,000 to 27,000; in two hours they were 23,000; in three hours 28.000. The following day the platelets had increased to 198,000. There was no difficulty in controlling the bleeding during operation, and there was no hemorrhage from the wound following its closure.

The platelets increased daily, reaching their highest point, 1,624,000, nine days after the operation. The petechiae began to disappear and no fresh petechiae occurred. On discharge, August 1, 1925, there were no petechiae or ecchymoses. The platelets were 1.200,000; the bleeding time 4 minutes; coagulation time normal; tourniquet test negative. The clot had not retracted in one hour, but there was some retraction in twenty-four hours.

The W. B. C. following operation behaved as one would expect; in one hour they had increased to 15,000, with 58 per cent P. M. N. The following day they numbered 20,000, with

85 per cent P. M. N. From that point they began to decrease and reached 10,000 on the fourth day. On discharge, the Hmb. was 85 per cent, and the R. B. C. 4,630,000.

August 14, 1925.—Two months after operation there was no return of petechiae. Menses had not been resumed. Platelets were 700,000.

September 19, 1925.—Patient had gained about 10 lbs. in weight. She had menstruated once with little bleeding. No return of petechiae. Hmb. 91 per cent. R. B. C. 4,000,000.

October 24, 1925.—Menses every three weeks, lasting three to five days with little bleeding. No petechiae seen. Hmb. 95 per cent. R. B. C. 4,750,000.

minutes. Capillary resistance test negative. Clot retracted in 1 hour.

Report on Spleen.—The spleen weighed 70 gm. The surface was smooth save for a few adhesions about the upper pole. The vessels were patent and not sclerotic. *Microscopical Examination.*—The Malpighian bodies were unusually well developed. The pulp and sinuses contained an abundance of mononuclear cells. There was no definite increase in connective tissue in the organ.

The interesting point in the case was the very high platelet count that occurred after splenectomy and the persistence of the count above normal figures.

TABLE I—THE BEHAVIOR OF THE PLATELETS, COAGULATION TIME, BLEEDING TIME, CAPILLARY RESISTANCE TEST AND CLOT RETRACTION BEFORE AND AFTER OPERATION.

Date	*Platelets*	*Coag. Time Min.*	*Bleeding Time Min.*	*Cap. Res. Test*	*Clot Retraction*
11/13/24	40,000	9	12	Positive	None
11/17/24	----------	----------	----------	----------	----------
12/10/24	20,000	----------	----------	Positive	----------
1/5/25	32,000	----------	----------	----------	----------
2/5/25	45,000	----------	----------	----------	----------
2/21/25	----------	----------	----------	----------	----------
2/28/25	----------	----------	----------	----------	----------
3/21/25	32,000	----------	----------	----------	----------
4/18/25	49,000	----------	----------	----------	----------
5/16/25	16,000	----------	----------	----------	----------
7/15/25	13,000	5	13	Positive	None
7/16/25 Operation					
1 hr. after operation	27,000	----------	----------	----------	----------
2 hrs after operation	23,000	----------	----------	----------	----------
7/17/25	198,000	----------	----------	----------	----------
7/18/25	500,000	----------	----------	----------	----------
7/20/25	742,000	----------	----------	----------	----------
7/21/25	1,000,000	----------	----------	----------	----------
7/22/25	1,400,000	----------	----------	----------	----------
7/25/25	1,624,000	----------	----------	----------	----------
8/1/25	1,200,000	5	4	Negative	None in 1 hr.
9/19/25	----------	----------	----------	----------	Slight in 24 hrs.
10/24/25	----------	----------	----------	----------	----------
1/16/26	288,000	5	2	Negative	Rectractile

January 16, 1926.—Patient had continued well. Hmb. 91 per cent, R. B. C. 4,560,000. Platelets 288,000. Bleeding time 2 minutes. Clot showed retraction in one hour. The tourniquet test was negative.

September 2, 1926.—General condition good. Has been menstruating regularly with little loss of blood. Hmb. 90 per cent. R. B. C. 4,290,000. W. B. C. 5,450. Platelets 206,000. Bleeding time 4 minutes. Coagulation time 7

REVIEW OF LITERATURE

I have been able to find in the literature reports of forty-two cases in which the spleen has been removed. There are no doubt a much larger number which have not been reported, and perhaps there are a few reported cases which have been overlooked.

The first case was that of Kaznelson's which was operated upon in 1916. Brill and Rosenthal have the distinction of operating upon the

first case in this country in 1922. Only one case appears in the English literature.

Of these forty-two cases, four were acute and the remainder chronic. Three of the four acute cases died and the remaining one was reported as being only benefited by the splenectomy. In the chronic cases there were three deaths. One patient died during the operation; one died one month after from a subphrenic abscess; and the third, a case reported by Farley, died nine days after operation. The author states that the diagnosis was doubtful. Hemorrhage continued after splenectomy.

These figures are very interesting. It seems that the acute cases are either not benefited or are only slightly benefited. The poor results that have been obtained in operating upon acute cases suggest the possibility that the acute cases have not the same etiology or pathogenesis as the chronic cases. Perhaps these acute cases have been ones of acute aplastic anaemia, acute leukaemia, or one of the acute infectious diseases. There are some who think that the two conditions should be more definitely separated.

BIBLIOGRAPHY.

Bass, M. H. and Cohen, Philip: Thrombocytopenic Purpura Hemorrhagica Successfully Treated by Splenectomy. *Am. J. Dis. Child.*, 27:332-335, April, 1924.

Bowen, B. D.: A Case of Chronic Purpura Hemorrhagica with Therapeutic Splenectomy. *Bulletin Buffalo General Hospital*, 1, 2, 1923.

Brill, N. E. and Rosenthal, N.: The Treatment by Splenectomy of Essential Thrombocytopenia (Purpura Hemorrhagica), Trans. Assn. Am. Phys., 38:294, 1923. The Curative Treatment by Splenectomy of Chronic Thrombocytopenic Purpura Hemorrhagica. *Am. J. M. Sc.*, 166:503-512, Oct., 1923.

Cohn, I., and Lemann, I. I.: Splenectomy as a Treatment for Purpura Hemorrhagica. *Surg., Gynec. and Obst.*, 38:596-604, May, 1924.

Cori, G.: Splenectomy in Treatment of Hemorrhagic Diathesis. *Zeitschr f. klin. Med.*, 94:356, 1922.

Engel, D.: Splenectomy for Essential Thrombopenia. *Arch. f. Klin. Chir.*, 129:563-568, 1924.

Farley, David L.: Purpura Hemorrhagica (Thrombocytopenic Purpura), with Report of a Case with Splenectomy. *Am. J. M. Sc.*, 170:10-22, July, 1925.

Flexner, M.: Idiopathic Purpura Hemorrhagica, with Report of a Case Cured by Splenectomy. *Kentucky M. J.*, 23:56-61, Feb., 1925.

Giffin, H. Z. and Holloway, J. K.: Hemorrhagic Purpura, Med. Clin. North America, 7, 241-248, July, 1923. A Review of Twenty-eight Cases of Purpura Hemorrhagica in Which Splenectomy Was Performed. *Am. J. M. Sc.*, 170:186-204, Aug., 1925.

Hitzrot, J. M.: Splenectomy in Hemorrhagic Purpura, etc. *Ann. Surg.*, 78, 185-190, Aug., 1923.

Sutherland, G. A., and Williamson. Bruce: The Treatment of Purpura Hemorrhagica by Splenectomy. *Lancet*, I, 323-327, Feb. 14, 1925.

St. Christopher's Hospital.

A CONSIDERATION OF THE PROGRESS AND VALUE OF CONSULTATION.*

By FRANK S. JOHNS, M. D., Richmond, Va.

A consideration of how best to obtain consultations is a question of timely importance. Failure to secure consultation is too often attended with dire consequences for the patient, surgeon and hospital. Fortunately for all, the day is now passing when the attending surgeon considered himself a sort of God infallible, and the wisdom of the entire hospital community as his own personal prerogative. Such progress is due to the thorough hospital training now generally given this generation of young physicians; to the organization of well-conducted staff meetings; and the standardization of hospitals.

The trained surgeon of today consistently invites consultations. He does so realizing that without such conferences poor work will result. Teaching hospitals require and encourage an exchange of ideas wherever there is reasonable doubt in a diagnosis. But more than other single factors, a well-rounded staff, holding its regular weekly meetings, will stimulate and increase the value of consultations. In such a meeting, constructive criticism is encouraged and all fatal cases are discussed in detail. The necessity of consultation here is at once apparent. Needless to say, when reporting a mortality, the man who has failed to take counsel with others will occupy an uncomfortable position. And next time he will either avail himself of this privilege or fail to attend the meeting. In the latter event his absence would prove an asset to the staff.

The so-called "team-work," often referred to in recent years, is not always what it should be. Even in our enlightened day, the presiding surgeon in private or politically controlled hospitals too often appears as coach, captain, manager and publicity agent of the whole outfit. A hospital conducted on such a plan will have few recorded consultations. An impartial follow-up system in such an institution would inevitably find tuberculous patients wearing a collar incision, and many a right rectus scar in cases of angina pectoris.

Consultations occur under different conditions. The ideal is a conference between general practitioner and surgeon. The consultant then does not undertake the treatment of the patient without the co-operation of the family physician. Under these circumstances, the

*Read before the Section of American College of Surgeons, Cumberland, Md., March 2-3, 1926.

lines which separate the two are well defined, there are no conflicts and no friction occurs. But not infrequently council is held between a "general specialist" and the family doctor. The lines of work practiced by this consultant are not well defined, and he infringes upon the general practitioner at every angle. Embarrassment frequently follows and little good results. Cordial relationship existing between the principals of a consultation promotes success. Unfriendly consultations court disaster. Consultants should always be selected by the physician in charge of the case. Too often the family wishes to call in a consultant on grounds of personal friendship. Unfortunately, such a man may be wholly lacking both in ability and in the spirit of co-operation, qualities equally essential in the successful consultant.

The best method of recording consultations is still a problem. Systematic training will do more to correct this defect in our technique than any other procedure. All conclusions should be recorded on the patient's chart. These notations should always be made in writing, and, if possible, immediately after the examination of the case. Delay precipitates incomplete records, or, as the Law puts it,—"contemporaneous explanation is the strongest."

In conclusion, I may add, the patient's illness should be kept always in the foreground. His welfare is the paramount consideration. Not infrequently we hear of the case that is sent on a weary round of specialist to specialist with apparently little accomplished. We must never forget, in our scientific zeal, that the patient is after all just seeking relief. Here, as everywhere, the golden rule gives us its good council and gentle rebuke—"Do ye unto others as ye would they should do you."

Johnston-Willis Hospital.

REPORT OF ONE HUNDRED CONSECUTIVE CASES OF SALPINGITIS.*

By G. H. REESE, M. D., Petersburg, Va.

The treatment of salpingitis of all three varieties—gonorrheal, puerperal, and tubercular—is perhaps as firmly standardized as any pathological condition known to the medical profession. This fact is proclaimed by the almost total neglect of this ever-present and formerly popular subject by writers since the advent of a complete reversal of treatment of these cases, which has gradually taken place during the past twenty-five years.

Formerly, the world over, a diagnosis of salpingitis meant an emergency operation, and almost universally these unfortunates were operated on immediately, regardless of acute pathology or etiology, the uniform result being a high mortality and morbidity.

Later, it was discovered by some patient investigators that these cases, if placed in bed at absolute rest, with an ice-bag on the abdomen, and given sedatives, laxatives, and proper diet, would almost uniformly improve—some to the point of complete recovery. Many would so improve as not to wish a subsequent operation, while all, with few exceptions, could be brought to a stage where operative measures could be undertaken with relative safety to life and decreased chances of future morbidity.

The publication of these facts led gradually to a complete reversal of management of these cases and, where rigorously applied, to a near negation of mortality.

Today no surgeon thinks of operating on a case of acute salpingitis without apology, unless it is complicated by some portentous condition that makes the refusal of such seem still more unwise,—certainly not until the temperature and leucocytosis has nearly or quite reached normal. Some surgeons, with much reason, go further and refuse to operate on these cases until six months or more after defervescence; while others defer operation if the patient's temperature shows a slight rise after a pelvic examination and a walk around the ward. Others wait only until the fever and leucocytosis have about reached normal.

This difference of procedure arises not from a difference of opinion as to the wisdom of waiting; but solely from the difficulty in some localities of providing sufficient hospital facilities for this class of patients. It is largely an economic question.

The best results following the most conservative line of treatment have been reported by Simpson. He operated by abdominal section on 475 consecutive cases, with a mortality of four.

The above remarks have reference to gonorrhoeal salpingitis alone.

Puerperal salpingitis is seldom of gonorrhoeal origin. It is usually a streptococcic infection. It does not tend to form dense or permanent adhesions, runs its course and usually results in more or less complete resolution

*Read at the meting of the Southside Virginia Medical Association, in Petersburg, September 14, 1926.

of the parts affected. It rarely affords a basis for even a late operation, and, under any condition, should be classed as a non-operative malady.

Tubercular salpingitis is generally found associated with tuberculosis of the ovaries, uterus and peritoneum. When the abdomen is opened, the tubes and appendix should be removed if conditions permit, and the patient placed on the usual treatment for tuberculosis.

The writer has endeavored to follow a conservative course in managing the cases reported in this paper, yet deviating at times through an erroneous diagnosis, or through yielding to insistence on the part of the patient for an operation, perhaps a little early, but desirable to her for its expected relief; and especially through the desire to get these patients out of the hospital and back on a self-supporting basis at the earliest moment consistent with reasonable safety.

Combined safety of operation and relief to the patient may be secured by vaginal section in those acute cases where a pelvic abcess or pyosalpinx present sufficiently low in the pelvis. This, however, except in those cases presenting well, is not unattended by danger to other viscera, and should be used in any case with caution, both as to diagnosis and surgical manipulation.

Abcesses high in the pelvis should be opened and drained as well as those in the lower pelvis. They are more dangerous. Palliative measures may be tried, but, if not speedily effective, an abdominal operation should not be delayed. The operation should, in acute abcess cases, be limited strictly to incision and drainage.

In draining salpingitis cases after a complete operation, the writer has followed the practice of draining as few as possible. When drains are used, and they are rarely used, they are almost without exception removed the following morning. A soft rubber drain is employed in those cases where rough suspicious tissue is left, and in those cases where hemostasis is uncertain.

In no case has any regret arisen for the early removal of these drains; while, on the other hand, the writer has noted the immediate cessation of pain, with prompt disappearance of nausea, distention, and threatened ileus, upon the removal of those allowed to remain for several days.

It is an old story that, after eight or twelve hours, the function of any kind of a drain in the abdomen ceases as an abdominal drain. If a sinus is desired to any particular area of infection, the drain may be left to effect this purpose: but it should be remembered that after eight or twelve hours it drains only the space it occupies. Again, if left too long, these so-called drains form dense adhesions, produce irritation and pain, and promote secondary infection and intestinal obstruction —the very evils most sought to be avoided. The necessity for abdominal drainage seems to disappear with the acuteness of the infection, and, if capillary oozing is controlled and no necrotic tissue is left, the demand for drainage is about obliterated.

The associated pathology found in these cases has in a large measure been reported in a previous paper to this society, and will be omitted here.

Every effort deemed consistent with safety has been made to conserve ovarian tissue. In spite of this attitude, it was a matter of surprise to find that in eleven cases both ovaries had been removed for one cause or another.

The appendix was removed in practically all cases.

Six of these patients were re-operated upon. On three, a subsequent supravaginal hysterectomy was performed. Two were later dilated and curetted, while from the sixth the left tube was removed, which seemed normal at the time of the first operation. In this latter case the diagnosis was in doubt; but a midline incision was made, revealing an inflamed appendix about half-way encapsulated within the right tube, and both in such a pathological condition as to leave the origin of the trouble uncertain. The left tube, seeming normal, was left to create its trouble later.

Eleven of these patients had abcesses other than tubo-ovarian. On three of these vaginal puncture was done. Two of these returned for a subsequent operation.

In this series of one hundred cases there were two deaths.

One death followed incision and drainage of a bilateral pelvic abcess extending high in the abdomen. This patient was so septic that she collapsed while undergoing anaesthesia and never fully revived. She died the next morning.

The other death was due to a septicemia from a double ovarian abscess. Most of this patient's pain and tenderness was on the right

side and, as she gave a history of six months' illness, her very acute symptoms were mistaken for those of appendicitis, with abscess formation. Both ovaries were found much enlarged and thoroughly purulent. They and the tubes were removed. The latter contained no pus or other fluid. The patient died the third day following operation of septicaemia, which she seemingly had on admission.

REPORT OF A CASE OF CYST OF THE THYRO-GLOSSAL DUCT.*

By E. G. GILL, M. D., F. A. C. S., Roanoke, Va.

Thyro-glossal cyst and fistulae may occur anywhere along the course of the thyro-glossal tract,—namely, from the foramen caecum to the body of the thyroid gland. For purposes of description, these locations have been tabulated by Klingenstein and Colp as follows:

1. Beneath the foramen caecum.
2. In the floor of the mouth protruding beneath the chin.
3. Suprahyoid.
4. Subhyoid.
5. On the thyroid cartilage or membrane.
6. At the level of the cricoid.
7. In the suprasternal notch.

When the base of the tongue is formed by the union of two lateral araches, an epithelial-lined canal persists, leading from the foramen caecum to the middle lobe of the thyroid. The upper portion of the duct may remain patent (lingual), while the lower region from thyroid isthmus to hyoid bone forms the thyroid duct (Ewing).

Patient, R. T. L., male, age 47, consulted me January 6, 1926.

Chief Complaint.—Has had choking sensations at times during the past year. This condition is worse when lying down. Patient thinks he has catarrh.

Past History.—The present symptoms began one year ago. During this time the patient has had no difficulty in swallowing and has followed his occupation of a trainman without inconvenience.

Examination.—Nose and accessory sinuses negative. Throat—tonsils apparently clean; laryngo-pharynx reveals a smooth, rounded pedunculated tumor situated between the base of the tongue and the epiglottis.

Physical examination, negative. Laboratory examination, blood Wassermann and urine negative.

Operation.—Tumor was seized with a hook and the pedicle was excised with a wire snare. No anesthesia. Patient left the hospital the following day and has since remained well. Dr. C. D. Nofsinger, Pathologist to the Lewis-Gale Hospital, made the following report:

"A cystic tumor about the size and shape of a partridge egg, measuring about 1¼ inches in one diameter and ¾ inch in the other diameter. There were no adhesions about the tumor. Upon sectioning, the tumor contained a thick milky looking substance which had an offensive odor. Microscopic examination revealed a cystic wall which was lined by several rows of epithelial cells. There was no malignancy found. From the location of this tumor and the pathological findings I believe it is a thyro-glossal cyst."

Cyst of the thyro-glossal duct is a rather rare occurrence. W. E. Sistrunk, in discussing a paper by Gessner, in 1913, before the Section on Surgery of the Southern Medical, stated that only thirty-one cases of 86,000 admissions to the Mayo Clinic were diagnosed as thyro-glossal duct cysts or fistulae. Klingenstein and Colp reviewed forty-two cases that were admitted to the surgical wards of the Mount Sinai Hospital from 1913 to 1924.

711 *South Jefferson Street.*

*Read before the American Bronchoscopic Society, in Montreal, on May 2., 1926.

THE MANAGEMENT OF ACUTE ABDOMINAL COMPLICATIONS DURING PREGNANCY.*

By ARTHUR S. BRINKLEY, M. D., Richmond, Va.

Formerly it was believed that the performance of surgical operations during pregnancy would almost inevitably bring about abortion or premature labor, even the extraction of a tooth being considered a severe procedure. At present, however, thanks to anesthesia and a perfected surgical technic, many operations can be performed at this time with but little additional risk. Accordingly, whenever a condition arises in the pregnant woman which imperatively demands surgical treatment, the necessary operation should be performed without hesitation. At the same time, if the indication is not pressing, it is advisable to defer interference until after delivery, so as not to subject the patient to an added strain. A review of the literature goes to show that amputations are not more dangerous than at other times. Williams removed a kidney on account

*Read at a meeting of the Academy of Medicine, Richmond, Virginia, February 9, 1926.

of a rapidly growing hyper-nephroma at the end of the fourth month of pregnancy, and the patient was delivered spontaneously at term; and Schmidt in 1915 collected from the literature thirty-six cases in which nephrectomy was performed, and had no effect on the course of pregnancy in twenty-eight instances. Furthermore, numerous cases are on record in which perinephritic or broad ligament abscesses have been opened. Tumors of the generative tract can likewise be excised without great risk or markedly increasing the danger of premature labor.

In discussing the acute abdominal complications during pregnancy, it is perhaps advisable to take up for consideration the acute surgical conditions arising from the abdominal generative organs first.

Retroversion of the Uterus.—This develops into an acute surgical condition when the pregnant uterus is not only retroverted but incarcerated in the pelvis by dense adhesions due to a previous infection and when all attempts to replace it by posture and manipulation through the vagina have failed. Abdominal section is certainly indicated to release the adhesions and replace the uterus in its normal position and hold it there by one of the numerous methods for shortening the round ligaments. The usual post-operative care should be observed, being careful to emphasize that the patient should be kept quiet with morphine, the bladder emptied regularly by catheterization and encouraged to lie on her side. Cases are very occasionally met with where it is impossible for the operator to restore the pregnant uterus to its normal position without lessening its size. Under these circumstances the uterus should be opened by a longitudinal incision in its anterior wall. Its contents should be removed by the gloved fingers and a finger be passed through the cervix to be sure of the escape of lochia. The uterus should then be closed by suturing the wound in layers and restoring to its normal position by shortening the round ligaments.

Fibro-Myomata of the Uterus.—The growth of these tumors is apparently in many cases stimulated by pregnancy. While many patients having these tumors do not conceive, their presence is not a positive cause of sterility; hence, it is not an infrequent occurrence to find pregnancy and a tumor existing at the same time. So long as they remain essentially sub-peritoneal they usually require no attention. However, with the pedunculated type one may be confronted with an acute condition which may assume serious proportions. This is best illustrated by briefly narrating a case which I recently had the pleasure of seeing with one of my colleagues. A primipara, age thirty, about five months pregnant, had noticed a lump in the right side of her abdomen for sometime which was freely movable and gave practically no discomfort. About twenty-four hours before I was called in consultation, she developed marked pain, tenderness, and rigidity in her lower right abdomen. On examination, a globular mass could be felt just above and continuous with the brim of the pelvis on the right. Her abdomen was so tender that very little manipulation was tolerated, but apparently the mass was fixed to the anterior abdominal wall. Temperature 101, pulse 110, urine practically negative, leucocyte count 21,000, polys 85. We were inclined to believe that the mass was any one of three things—a simple ovarian cyst or dermoid with a twisted pedicle and subsequent infection, a tubo-ovarian abscess, or an appendiceal abscess which had formed in the iliac fossa. We decided to wait until the next morning before resorting to surgery. She was seen again the next day at 9:00 A. M., when the condition presented an entirely different picture. The mass was entirely out of the pelvis, freely movable, and about the size of a small grapefruit. There was some tenderness over the right lower abdomen but nothing like the night before. The mass was rather firm, with a slight doughy consistency, urine practically negative, leucocyte count 12,000, polys 79, temperature 100, pulse 90. After careful examination, we decided it was very probably a pedunculated fibroid which had become partially strangulated by twisting of the pedicle, and the best course to pursue was one of watchful waiting. She was very much better the next day and I understand that she has had no serious trouble since, although the mass is still there.

Ovarian Tumors.—These often complicate pregnancy. Advanced pregnancy and an ovarian tumor of large size cannot exist in the same individual at the same time; therefore, when an ovarian tumor can be diagnosticated, it is usually in early pregnancy, or else the tumor is a small one. It has never been shown that pregnancy stimulated the growth of such

tumors, but it is a matter of not infrequent occurrence that when pregnancy suggests a thorough examination of a patient, an ovarian tumor is found already existing. Pregnancy complicates the existence and development of a small ovarian tumor, for the tendency during pregnancy is for the ovarian tumor to become twisted on its pedicle. This is a serious accident, for the circulation of the tumor may be interfered with and gangrene of the tumor and resulting toxemia for the patient may develop. It is of importance, then, to recognize the seriousness of the situation early and, if the condition is not relieved in due time, abdominal section should be made without delay and the cyst removed intact.

The usual post-operative care with plenty of morphine hypodermically to prevent abortion is indicated.

If the tumor complicates an advanced pregnancy and labor develops, the pressure of the presenting part may cause a rupture of the tumor, with the escape of its contents into the pelvic and abdominal cavities. The irritation of such contents will cause peritonitis and demand surgical intervention for incision and drainage. These patients should be given the recognized supportive treatment for peritonitis with plenty of morphine to prevent spreading of the peritonitis by active peristalsis.

There can be no question concerning the importance of removing an ovarian tumor complicating pregnancy. It may be difficult to decide when the tumor should be removed. A small tumor should be removed as soon as the diagnosis of its presence is made. This exposes the patient to the risk of the interruption of pregnancy, but such risk is less than that entailed by twisted pedicle of the tumor and the complications which its growth may produce. If a tumor is discovered late in pregnancy, or the discovery is not made until shortly before the end of pregnancy, opinion is divided regarding the choice of time at which the tumor should be removed. It has been suggested that a small tumor in the pelvis interfering with the descent of the child may, under anesthesia, be pushed up above the pelvic rim, labor may be allowed to develop and, during the puerperal period, the tumor may be removed. If the tumor is large, the suggestion has been made that it be tapped, its size reduced and the uterus then emptied spontaneously through the vagina, or by vaginal operation, followed by the removal of the tumor.

Davis is of the opinion that an ovarian tumor, whether cystic or solid, or containing both cystic and solid material, should be removed as soon as possible after its presence is discovered. If, at the time of removal, adhesions are absent and the pedicle of the tumor so situated as not to interfere with the action of the uterus, spontaneous labor may be awaited. If, however, adhesions are such as to interfere with the action of the uterus, or the intra-abdominal conditions are so complicated that uterine action may be dangerous for the patient, then the obstetrician may prefer to empty and close the uterus first, and then remove the tumor at the same operation. Surgical experience and judgment must decide these questions.

Salpingitis.—Acute salpingitis is a very serious complication of gestation, and without doubt is the hidden cause of many cases of sepsis intra-partum and post-partum. During gestation the diagnosis is almost impossible; a peritonitis will be assumed, and if the symptoms are urgent, laparotomy will have to be performed. During pregnency a departure should be made from the method of treatment of pyo-salpinx. Labor will almost certainly rupture the abscesses, and it is, therefore, best to remove the sacs. It is a question whether it is advisable to wait for the contents to become sterile. If at operation there is reason to believe that the streptococcus is associated with the gonococcus, it may be wisest to extirpate the uterus at the same time that the tubes are removed, but the prognosis is bad in such cases.

Pelvic Abscess.—When this condition complicates pregnancy, evacuation with the least possible disturbance of the pelvic tissues is required. This should be done under surgical anesthesia by a broad transverse incision across the posterior vaginal wall, followed by the introduction of one or two fingers of the gloved hand and a gentle but thorough examination of the tissues. A large, perforated soft rubber tube may then be inserted and retained in place by a light packing of 10 per cent iodoform gauze. The head and trunk of the patient should be raised somewhat in bed to encourage free drainage. Pain should be controlled by hypodermic injections of morphine. The tube should be removed when the dis-

charge diminishes markedly, but the gauze packing should be allowed to remain so long as it is draining efficiently. No further manipulation than the removal of the tube and packing should be practiced, and after this has been done, it is well, if possible, to avoid douching and sponging of the vagina, maintaining strict external cleanliness and antisepsis.

Extra-Uterine Pregnancy.—As soon as an unruptured extra-uterine pregnancy is positively diagnosed, its immediate removal by laparotomy is urgently indicated, since rupture may occur at any time and the patient die from hemorrhage before operative aid can be obtained. The importance of immediate operation cannot be too strongly emphasized, and all methods of treatment which aim at destroying the foetus and thus terminating pregnancy without operation are absolutely unjustifiable.

Although Stephen Rogers, in 1867, suggested the propriety of performing laparotomy for the purpose of checking hemorrhage from a ruptured tubal pregnancy, Lawson Tait, in 1883, was the first to undertake such an operation. After he had demonstrated the ease with which it could be performed and the surprisingly good results obtained thereby, the procedure came into general use.

Whenever we see a possibly pregnant woman in a state of profound collapse, and presenting a deathly pallor of the face, a subnormal temperature, and other symptoms of intra-abdominal hemorrhage, immediate operation is demanded, unless, indeed, her condition is so desperate that death is imminent.

The abdomen should be opened rapidly under local anesthesia, if necessary, and the bleeding tube and mass clamped off quickly to control hemorrhage. The blood clots are then removed and the field of operation cleaned up, after which the operator can complete the operation without fear of losing more blood. After the foetal sac has been removed, it is not advisable to attempt to remove all the blood from the peritoneal cavity unless the patient's condition is fairly satisfactory. Opinion is divided on the subject of removing the opposite tube. If the patient has no children, it should be left unless it is so badly diseased as to render conception impossible; then, again, the patient's condition may be such that it would be far better to let it remain than to remove it at this time.

In desperate cases it is advisable to attempt to revive the patient temporarily by direct transfusion of blood before beginning the operation, and to continue the transfusion after its completion. In less serious cases the subcutaneous or intravenous infusion of normal saline solution or 5 per cent sterile glucose solution should be begun while the necessary preparations for the operation are being made. There is a difference of opinion among obstetricians as to the time of operation. Davis believes, and it is the author's opinion, that all cases of extra-uterine pregnancy should be subjected to operation as soon as practicable, regardless of the condition of the patient. The patient should be given supportive treatment after operation, foot of bed elevated, heat applied to body, and transfusion of whole blood, as indicated.

Appendicitis.—Appendicitis probably occurs as frequently during pregnancy as at other times, but until fairly recently, it was usually overlooked. Renvall, in 1908, recorded twenty-five personal cases, and collected 253 cases from the literature.

It should be regarded as a very serious complication, as many die if not operated upon, while the surgical procedures undertaken for its relief are frequently followed by premature labor.

One should always consider the possibility of appendicitis when a pregnant woman complains of pain in the right side of the abdomen, associated with an elevation of temperature and pulse, provided some more satisfactory explanation of the condition cannot be found. It should, however, be remembered that pyelitis or inflammatory conditions of the appendages may give rise to identical symptoms at the time af labor. During the puerperium its recognition is still more difficult, and many women have died from peritonitis resulting from a perforated appendix with the diagnosis of puerperal infection.

Operation is indicated in all cases in the early months. Later in pregnancy the presence of the enlarged uterus renders it difficult to expose the parts satisfactorily and may seriously interfere with proper drainage, should it prove necessary. I am of the opinion, however, that operation should be performed, even in the late months of pregnancy if the symptoms, clinical and laboratory findings, indicate that there is a likelihood of perforation.

In the early months abortion is not likely to occur, provided the uterus has not been subjected to manipulation; in the latter months, premature labor is frequently observed, particularly in cases of abscess formation. It may be due to one of several factors,—manipulation of the uterus, fever, and, when an abscess has formed, to the direct transmission of bacteria from it to the foetus. The recognized post-operative treatment for appendicitis and its complications should be observed.

Infection and Inflammation of Meckel's Diverticulum.—This rare complication may result from the same causes which produce infection in the appendix. In recognizing the condition, the obstetrician must not be deceived by the reflected pain on the left side of the abdomen, which often accompanies appendicitis. Should this unusual condition develop, it would probably scarcely be recognized accurately, except upon abdominal section. Then the treatment for the condition should naturally be employed. In dealing with this complication of pregnancy, the question of first emptying the full term uterus would again come up for consideration, and unquestionably this should first be done, the ample median incision giving abundant room for the treatment of the infection of the diverticulum.

Acute Cholecystitis.—It is the disposition of obstetricians and surgeons at the present time to palliate cholecystitis complicating pregnancy and, when a woman has recovered from gestation, to drain or remove the gall-bladder. On the part of the general surgeon, there is a marked reluctance to operating on the gall-bladder in pregnant women. Unquestionably in advanced pregnancy, the congestion caused by pregnancy is an unfavorable element. In extreme cases where infection of the gastro-intestinal tract has attacked the appendix and gall-bladder as well, it may be necessary first to perform Cesarean section; second, to remove the appendix; and, third, to drain or to remove the gall-bladder. Obstetricians are coming to believe more and more that in the event of an intra-abdominal condition of importance complicating pregnancy at term, it is safer first to empty the uterus and then to deal with the complicating condition.

Gastric or Duodenal Ulcer.—Every effort should be made to palliate the condition until the pregnancy has terminated. In perforation, the situation is most serious, and it is imperative that something be done at once. With an existing peritonitis, to do a Cesarean section and leave the uterus would almost certainly be fatal from a secondary infection. It would be advisable to close the perforation, and do a jejunostomy, so as to give the patient feeding through the tube, and run the risk of the wound healing before labor sets in. On the other hand, should obstruction be so great as to occlude the pyloric end of the stomach and a gastro-enterostomy had to be done, it would be next to impossible without emptying the uterus first. The post-operative care would be along the recognized lines of treatment for general peritonitis.

Peritonitis During Pregnancy.—This usually occurs from perforated appendix, acute perforation of gastric or duodenal ulcer, or ruptured pus tubes. Treatment of the conditions enumerated have been considered. In addition, the peritonitis must be treated by recognized methods. The condition is exceedingly grave.

Intestinal Obstruction.—This rare complication of pregnancy should be treated upon general surgical principles. Enterostomy through a very small incision is the operation of choice. If there is evidence of gangrene, resection must be done. The post-operative treatment is supportive.

Summary

1. The performance of surgical operations in the pregnant woman is not considered with nearly as much gravity as was formerly the case.

2. Whenever a condition arises in the pregnant woman which imperatively demands surgical treatment, the necessary operation should be performed without hesitation.

3. Fibromyomata complicating pregnancy, as a usual rule, require no attention, but with the pedunculated type one may be confronted with an acute condition which may assume serious proportions.

4. There is a tendency during pregnancy for an ovarian tumor to become twisted on its pedicle, and there can be no question concerning the importance of removing it by surgical interference. Opinion is divided as to the time it should be removed. The author believes that surgical experience and judgment should decide this question.

5. During pregnancy a departure should be made from the method of treatment of pyosalpinx. Labor will almost certainly rupture the sacs, and it is, therefore, best to remove them.

6. An unruptured extra-uterine pregnancy should be removed just as soon as a positive diagnosis is made, and ruptured cases should be subjected to operation as soon as practicable, regardless of the condition of the patient.

7. Appendicitis probably occurs as frequently during pregnancy as at other times, and one should not hesitate to operate, even in the late months of pregnancy, if the symptoms, clinical and laboratory findings, indicate that there is a likelihood of perforation.

8. Undoubtedly, many women have died from peritonitis resulting from a perforated appendix or ruptured pus tubes with the diagnosis of puerperal infection, and the attending obstetrician directly or indirectly blamed for negligence in the management of the case.

9. It is the consensus of opinion among obstetricians and surgeons that palliative treatment should be used in acute cholecystitis complicating pregnancy.

10. Every effort should be made to palliate gastric or duodenal ulcer until pregnancy has terminated.

REFERENCES.

1. DeLee: Principles and Practice of Obstetrics.
2. Williams: Obstetrics.
3 Davis: Complications of Pregnancy, Gynecological and Obstetrical Monographs.

601 *Medical Arts Building.*

ADYNAMIC ILEUS IN UROLOGY.*

By R. M. LeCOMTE, M. D., Washington, D. C.
Professor of Genito-Urinary Surgery, Georgetown University School of Medicine; Genito-Urinary Surgeon, Georgetown University Hospital.

I am taking the liberty of presenting to you tonight, instead of the conventional case report, the essential features in two cases of a condition unusual to urologists, together with notes from two other cases which influenced my treatment of these.

While doing post-mortem work at the old Washington Asylum Hospital in 1917 I had the opportunity of doing a section on a young white man who had died from adynamic ileus shortly after a simple appendicitis operation. There was a small area of peritonitis in the region of the caecum but no general peritonitis. The large bowel was filled but not distended with gas. The small intestine and stomach were greatly distended with gas and fluid so that the diameter of the latter was perhaps two inches throughout its entire course. This dilatation ceased abruptly at the ileocecal valve. The small bowel hung in festooned loops from the mesenteric attachment and filled up the lateral gutters of the abdomen. Fluid fecal matter held these loops down firmly at either side of the vertebral column so that there was no gut between the vertebral column and the anterior abdominal wall—an efficient water-trap. Efforts to move this fluid along the canal by manual manipulation succeeded only in moving a part of the fluid into the next loop: an endeavor to accomplish the same thing by tilting the body from one side to another succeeded in emptying some of the loops, since, when the body was turned onto the back again a portion of the stagnant fluid would remain on the side from which the body had been turned, leaving some loops free from fluid. It was evident that if one were to make a diagnosis of this condition during life, the proper therapy would consist in turning the patient at frequent intervals so that the same thing might be accomplished as was effected by turning the body of the cadaver. The fluid would progress along the canal either towards the stomach or rectum and could be removed by a stomach or rectal tube, thus giving the overstretched bowel musculature an opportunity to contract and regain its normal tone.

The first opportunity that I had to apply this idea clinically came in 1919 in a woman whom I had referred to a colleague for double pyosalpinx. Some two weeks after the operation this patient developed soft tympanites and complete obstruction, characteristic of adynamic ileus. The patient had slight fever, a weak thready pulse, and a leukocyte count. With the patient on her back the abdomen was flat and considerably broadened; the anterior part was tympanitic but the flanks were dull. When she was turned to one side or the other the upper flank became tympanitic at once, while the lower one broadened out and was dull on percussion. She was turned from one side to the other and onto the back and abdomen every two hours, and within twelve hours she began to pass gas and fluid per rectum and the distended abdomen went down. The result was quite satisfactory.

On October 13, 1925, I did a right nephrectomy for tuberculosis on a man aged fifty-one

*Read before the Galen Hippocrates Society, April 18, 1926.

years. On the third day his bowels refused to move despite enemata and peristaltin injections: later that day his abdomen became distended, the dependent portion being dull, with dullness changing rapidly on change of position. Fluids by mouth were stopped and salt solution given hypodermically, and he was turned every two hours as in the preceding case. In this instance the fluid moved towards the stomach and he began to vomit. His stomach was washed on the fifth day; his bowels moved normally on the sixth day, and he was able to retain fluids taken by mouth from that time on.

On January 4, 1926, I did a one stage prostatectomy on a man aged forty-eight years. Three days later his abdomen became distended, the bowels could not be moved by enemata, and vomiting ensued. The physical signs in the abdomen were those noted in the other case. In this instance I was not quite sure that the peritoneum might not have been opened and the rent overlooked at the time of operation, so that a mechanical or inflammatory obstruction was in my mind. Accordingly, we waited until the fifth day before instituting the turning treatment. In this instance, no fluid was obtained by rectum and lavage of the stomach was not altogether successful. On the sixth day a duodenal tube was inserted and left for twelve hours, during which time sixty ounces of liquid fecal matter passed through it. The distention was relieved and his bowels moved on the seventh day. His convalescence was otherwise uneventful.

In the diagnosis of adynamic ileus, the essential features to be noted are complete obstruction with abdominal distention, with dullness in the flanks, the dullness shifting rapidly to that part of the abdomen which is most dependent. Vomiting is ordinarily present, and may or may not be fecal in character. Differentiation from mechanical obstruction can never be altogether certain, and must be made from the history, symptoms and the type of operation done.

Having been successful in three cases, I may be over-enthusiastic about the treatment employed and may have several deaths due me, but I submit it to you for your consideration.

The essential features of this treatment are:

(a) Withholding of all food and giving fluids subcutaneously, if necessary.

(b) Turning patient from side to side and on to the back and abdomen at such intervals as may be convenient.

(c) The use of the rectal and duodenal or stomach tube.

In the one instance in which I have used it, the duodenal tube was much more efficient and less irksome to the patient than the stomach tube used in the other cases.

References to ileus following operation are scarce, but all writers report a high mortality. In 276 cases, Deaver and Ross noted a mortality of 42 per cent; other observers give varying figures, but in none of the articles studied was it possible to accurately separate the adynamic variety from those due to true mechanical or inflammatory obstruction. This is probably due to the fact that most of the cases reported were ones in which operation was secondary and, during this necessarily hurried procedure, careful examination of the abdominal contents could not be done.

Clinical instances of ileus not post-operative are noted by Eisendrath who reported (*Surg., Gynec. and Obstet.*, 1916, 22, 6, page 699) three cases, two associated with renal stone and one with hyper-nephroma. He discusses the cause of the condition as related to its appearance in association with kidney diseases, and believes that it comes from irritation of the splanchnic nerves which are in connection with the kidney. He illustrates these connections very distinctly with a diagram from Lucianni.

1801 *Eye Street, Northwest.*

DIFFERENTIAL DIAGNOSIS OF SOME OF THE MORE COMMON SKIN DISEASES.*

By W. F. MANLEY, M. D., Roanoke, Va.

Probably at least one-third of all diseases of the skin fall under what we call the papulo-squamous eruptions. By this term we mean that the essential primary lesion is a papule covered by a squama, or scale. Papules are solid elevations of the skin varying in size from a pin-head to a pea. Any elevation larger than a pea is no longer a papule but a nodule. Papules vary in shape—conical, acuminate, plane surfaced, or umbilicated; their outline may be round, angular, or irregular. They vary in consistence—soft and hard. In color they may be yellow, red, lilac or the color of the normal skin.

The scales may be fine and powdery or

*Read before the Southwestern Virginia Medical Society, at Blacksburg, September 9 and 10, 1926.

branny (furfuraceous). They may be loosely or firmly attached. They may be stratified, as in psoriasis, in the form of thin flakes, or only partly attached, as in exfoliating dermatitis.

The most common papulo-squamous eruptions are, in order of their frequency:

1. Eczema.
2. Psoriasis.
3. Seborrheic dermatitis.
4. Papulo-squamous secondary syphilides.
5. Tinea versicolor.
6. Pityriasis rosea.
7. Lichen planus.
8. Lupus erythematosus.

Only the high spots in the differential diagnosis can be considered:

1. *Eczema.*—Its prevalence is estimated at from 18 to 40 per cent of all cutaneous affections. In recent years there has been a tendency among dermatologists to avoid the use of the term, eczema, and a large number of conditions previously described as eczema have been shown to be separate disease entities. Sabouraud, Whitfield, Ormsby and Mitchell have shown recently that many of the so-called "eczemas" of the feet are, in the majority of cases, a local infection with the epidermophyton inguinale. Such cases are now called epidermophytosis. The word "eczema" is reserved for cases, the origin of which we admit ignorance and whose clinical picture has definite fixed characteristics. These fixed characteristics are redness, superficiality, weeping and fissuring in acute cases, and, if chronic, thickening and infiltration. The subjective symptoms of itching and burning are usually well marked.

Eczema may occur anywhere on the cutaneous surface, especially on the exposed parts and the flexor aspect of the extremities.

2. *Psoriasis.*—This disease constitutes about 2.7 per cent of all dermatoses according to the figures of the American Dermatological Association. It is a chronic, occasionally acute, inflammation of the skin, characterized, primarily, by circular red papules, more or less completely covered with dry, greyish or silvery, stratified, imbricated, friable scales. It is not very itchy as an ordinary rule. It may occur anywhere, but it is especially fond of the extensor aspects, especially the elbows, knees and tibial crests. The scalp is very commonly involved. The individual papules show a marked tendency to become confluent, forming patches which are sharply defined and of a dull reddish hue. It is not infectious, may begin at any age, and is very liable to recur.

3. *Seborrheic Dermatitis.*—This is a fairly common disease, constituting about 2 per cent of all skin affections. The disease usually begins on the scalp about the hair follicles in the form of small papules, which may be discrete or grouped and coalescent. The lesions are covered by soft loosely adherent yellow greasy crusts. The hair is usually greasy but may be very dry. The skin beneath the crusts is markedly inflammatory. There is a tendency to involve the glabrous skin by downward extension. When this occurs, it usually does so either back of the ears, or through the midline of the face; then the forehead, eyebrows, nose, naso-facial and naso-labial grooves, the upper lip, and the chin are affected. In addition, the body and limbs are often involved, those parts most often affected being the sternal and interscapular regions. The itching is mild. Unless treated, it extends slowly and persists indefinitely.

4. *Papulo-Squamous Secondary Syphilides.*—Here we have a generalized eruption of discrete, "shotty," ham colored papules. Polymorphism is a striking feature. As a general rule the papulo-squamous type of lesion is more or less localized to symmetrical areas of the face, neck, and frequently the palms and soles are affected. The remaining portion of the body presents a purely papular eruption. Itching is usually absent except in the follicular type.

The mucous membranes are very apt to become involved. The most frequent and characteristic type of syphilis of the mouth is the mucous patch, sometimes called the erosive syphilide. This is round, or, more frequently, oval, and is nothing more than a syphilitic papule altered by environment. The most common site is on the inner surface of the lips, especially at the angles of the mouth. The surface of these patches is usually covered by a gray shining membrane that, when detached, reveals an underlying superficial ulcer. These patches are sharply circumscribed, and there is usually no surrounding inflammatory areola.

Other clinical aids, of course, are the generalized adenitis, the constitutional symptoms, such as sore throat, headache and backache, and, last, but not the least, the accompanying positive Kahn and Wassermann reactions.

5. *Tinea Versicolor.*—This is an infectious

disease of the skin caused by the microsporon furfur. It is very common, constituting about eight-tenths of one per cent of all dermatoses. It consists of many pin-head to pea-sized yellow fawn colored macules and maculo-papules covered with a fine furfuraceous scale. The lesions are usually confined to the trunk, especially the chest and interscapular regions.

The course is chronic and, if untreated, persists for years, and, in as much as it usually causes no subjective symptoms, it is frequently neglected by the patient.

6. *Pityriasis Rosea.*—This condition constitutes five-tenths of one per cent of all skin diseases. It often begins with a sore throat, some fever and malaise, and the disease is distinctly self-limited, terminating in a spontaneous cure in from six to eight weeks.

Usually there is first noticed a "herald patch," a red scaly patch of variable size up to about two inches in diameter. This may appear anywhere except on the face, hands or feet. A day or two later there is a sore throat and some general malaise, and then the widespread eruption generally manifests itself. This eruption may be macular, maculo-papular or distinctly papular. At first the color is bright rosy red and the lesions are covered with a small furfuraceous, cigarette-paper scale. After several days central involution takes place and they become a yellow fawn color in the center with a raised rosy border, covered with a fine scale. At the sides of the trunk the oval patches tend to be arranged with their long axes parallel to the ribs. This is a very helpful point in diagnosis.

The itching is variable. When pruritus is present, it is usually more noticeable at night. There is usually an associated general adenitis, as in syphilis.

7. *Lichen Planus.*—In frequency, lichen planus constitutes about five-tenths of one per cent of all cutaneous affections. In typical cases the eruption appears suddenly as an acute generalized outbreak of reddish-violet flat-topped (planus) polygonal papules. The lesions are often umbilicated and tend to coalesce. The itching is usually intense. The areas of predilection are the flexor surfaces of the wrists, arms, abdomen, legs, back of hands, genitalia and oral cavity. The face, scalp, neck and palms are spared.

The lesions on the mucous membranes of the tongue and mouth consist of bluish-white milky patches and lines arranged in mosaic. These mucous membrane lesions are practically always mistaken for leucoplakia. The mucous membranes of the genitals are also commonly involved.

Lichen planus is a disease of adult life. It is slow in both evolution and involution, and when it subsides a brownish pigmentation is left which slowly fades away.

8. *Lupus Erythematosus.*—This constitutes about one-third of one per cent of all dermatoses. The chronic type is easy to diagnose if one keeps in mind the cardinal points, namely, its roughly symmetrical distribution over the nose, cheeks, ears and scalp. In very rare acute cases only does it become generalized.

The lesions are reddish papules, covered with a very adherent grayish scale, tending to become confluent in discoid patches, spreading peripherally and clearing in the center, leaving atrophic scars. Lupus erythematosus never ulcerates. It is extremely chronic and its course of evolution is slow.

The foregoing skin diseases constitute probably 40 per cent of all skin affections and their recognition is of far greater importance than merely from a diagnostic pastime.

Many a case of pityriasis rosea has been called syphilis and the patient subjected to an intensive course of antisyphilitic treatment and left to spend his remaining days in fear of some dreaded complication in later years.

Thousands of cases of epidermophytosis are yearly mis-diagnosed as "eczema" and efforts to run down foci of infection or some internal causative factor result in subjecting the patient to needless gastric analyses, teeth extraction, etc.

In order to intelligently treat any of these skin conditions, we must at least keep the more salient diagnostic points in mind.

409 *MacBain Building.*

DIAGNOSIS OF DISEASE OF THE NASAL ACCESSORY CAVITIES.*

By C. E. BOWLES, M. D., Pulaski, Va.

The diagnosis of disease of the nasal accessory cavities is a subject more or less familiar to you all but one which should receive our most careful consideration. It is not only fraught with many immediate dangers, but is often the causative factor underlying numerous systemic conditions, to say nothing of the great economic lost due to weakened mental

*Read before the Southwestern Virginia Medical Society, at Blacksburg, Va., September 9-10, 1926.

faculties resulting from pressure and toxic absorption.

I have selected this as my subject, not that I hoped to add anything new to your present knowledge, not to flaunt the banners of the rhinologist, but simply to refresh your memory and call attention to a series of conditions in which an early diagnosis is fruitful of much good, while negligence and a delayed diagnosis may result in dire consequences. I recall with regret the many cases of frequent and chronic head colds, hay fevers, headaches, ocular muscle errors, enlarged lymph glands of the neck, nasal blockage and discharge, optic neuritis, and two cases of meningitis, that came to my attention during the eight years I was in general practice, and for which I usually prescribed some simple symptomatic remedy without examining the nose or even suspecting disease in the nasal accessory cavities as the causative factor. It is my mistakes of the past that prompt me to urge a more careful examination of the nose and accessory sinuses in all cases where the above symptoms are found, that you may be spared the mortification and chagrin of my experience.

The symptoms which should arouse our suspicion of disease in the nasal accessory cavities are headache, chronic or repeated head colds, hay fever, nasal discharge, blocking of the nasal passages, enlarged lymph glands of the neck draining this area, confused mental processes, symptoms of focal infection, edema of the eye-lids, conjunctival, ciliary and scleral injection, lachrymation, photophobia, reduced vision, restricted field for form and color, relative scotomata and enlargement of the blind spot. Muscular errors with diplopia corresponding to the displacement of the eyeball, muscular paralysis and retrobulbar optic neuritis corresponding to the amount and position of the pressure and to the transference of infection.

The headache usually begins in the region of the affected sinus, but, as the pressure is increased within the sinus, it may be referred to other regions of the head and in some cases to the neck muscles, shoulder and elbow. I have seen one case of ethmoid empyema in which the pain extended to the wrist, and was not relieved until free drainage was established. In the second and third stage of sinusitis, when the sinus is distended with secretion or pus, there may be some localized tenderness and swelling. Likewise, certain ocular symptoms may result from the pressure or transferred infection, and vary somewhat with the sinus involved.

Distention of the frontal sinus generally manifests itself at the upper inner angle of the orbit and pushes the eye-ball downward and outward. Distention of the ethmoid results in a swelling at the inner angle of the orbit and pushes the eye-ball outward. Distention of the sphenoid sinus should cause a displacement of the eye-ball directly forward and may result in sudden blindness from pressure on the optic nerve. Distention of the antrum may result in a swelling just back of the orbital margin and cause an upward displacement of the eye-ball.

Having seen the effect of distention of the sinuses on the ocular muscles, it might be advisable to hurriedly review the location of the individual sinuses and their relation to development and important structures. The frontal sinus is an off-shoot of the ethmoid and appears in the orbital plate between the first and third year. By the seventh year it has attained the size of a small pea; about the age of puberty it begins to extend and forces its way into the frontal bone. In adult life it varies greatly in size as to height, width and depth, and on the two sides. Sometimes it is absent on one or both sides, or it may be duplicated. It drains through the frontal duct into the infundibulum and empties through the hiatus semilunaries into the middle meatus. The attachment of the middle turbinate to the external wall of the nose marks the line of division between the superior and middle meatuses and also marks the line of division between the anterior and posterior ethmoid cells. The anterior cells lie in front of and below it, while the posterior cells lie above and behind. These cells, from nine to fourteen in number, are present at birth and lie in close relationship to the inner wall of the orbit, extending from the frontal sinus backward to its apex.

There may also be accessory ethmoid cells in the middle turbinate and uncinate process and, when present, drain into the middle meatus. The posterior cells are usually fewer in number, but larger in size than the anterior cells, though sometimes they occupy nearly all of the ethmoid labyrinth and extend to the anterior portion of the nose. Likewise, the anterior cells sometimes extend backward almost to the sphenoid bone. The anterior and accessory ethmoid cells with the frontal sinus and antrum drain into the middle meatus,

while the posterior ethmoid cells and sphenoid sinus drain into the superior meatus. In early childhood, the ethmoid cells are well defined and are often the subject of disease. They are a frequent source of orbital infection and of optic nerve disease, as well as insufficiency of the internal recti muscles and confused mental processes. The proximity of the anterior ethmoid cells to the lachrymal fossa may lead to a secondary dacryocystitis, while the frontal sinus and antrum are frequently secondarily involved. The ostium of the posterior ethmoid cells opens into the posterior portion of the superior meatus, and its secretions drain downward and backward over the posterior half of the middle turbinate into the nasopharynx. Some of the secretion flows over the border of the middle turbinate, between it and the septum, through what is called the olfactory fissure.

On account of the deep situation of the posterior ethmoid cells, external tenderness is not present when they are diseased, though exophthalmus may result when the os planum is pushed outward behind the eye-ball by the retained secretions. This would give rise to diplopia and to a circumscribed visual field, especially for colors. The optic nerve may be injured as it passes over the roof of the sphenoid sinus. In closed empyema of the sphenoid sinus, the thin bony wall of the roof is softened, so that compression or even destruction of the optic nerve with atrophy and blindness may result, or the optic neuritis may result from the toxin originating in the infected sinus.

Should the pressure involve the sphenoid fissure, which leads from the cranial cavity into the orbit, the oculomotor nerves—the third, fourth and sixth,—the ophthalmic division of the fifth, some filaments from the cavernous plexus of the sympathetic, the orbital branch of the middle meningeal, the recurrent branch of the lachrymal arteries and the ophthalmic vein would be affected. The differential diagnosis of paralysis in the ocular muscles belongs to the field of ophthalmology, though it is evident that certain restricted movements of the eye would arise.

Passing from the sphenoid sinus with its numerous complications, we come to the largest of the accessory cavities, the antrum. The antrum is frequently diseased, and its roof, which is thin, forms the floor of the orbit and contains the infraorbital canal. Its floor is often pierced by one or more teeth. Of these, the three molars, the premolar, and the canine, are the offending ones. Its ostium opens into the middle meatus, so that it may become infected by either of these routes.

From these few scattering anatomical points we may readily understand the importance of an early diagnosis in these conditions, but we must not lose sight of the fact that the classical symptoms as laid down in text-books may not all be present, and, when present, are usually indicative of a well-advanced case. In the first stage of sinusitis, there is a congestion and thickening of the mucous membrane and a narrowing of the natural outlet, with an increase and retention of the mucus secretions within the sinus. This may or may not give rise to the subjective symptom of pain. The only objective symptoms are those observed on examining the nose, when we may find some form of obstruction, and afford relief by the application of adrenalin or cocain solution. In the second stage, pressure may greatly distend the cavity, so that the orbital space is encroached upon and ocular symptoms make their appearance. Great pain, or headache, with tenderness on pressure over the involved sinus, conjunctival injection, blurring of vision, and the expression of suffering are then evident. Nasal examination again comes to our aid, and we find an inflamed, swollen middle turbinate and possibly some discharge in the middle meatus or olfactory fissure. The application of cocain or adrenalin to the middle turbinate may again give considerable relief, and be followed by marked drainage, or the condition may continue and pass into the third stage. This is the stage of suppuration, and the process is no longer confined to the sinus. Orbital abscess with all its dangers may ensue, or extension upward and backward into the brain cavity may result in a fatal meningitis. Necrosis of the bone and the formation of fistulae may be expected. The ocular symptoms which may exist in disease of any of the sinuses have already been enumerated. The individual sinuses are usually distinguished by the following methods, as shown by the cases which I have selected from my case histories.

Case 1. Patient came in complaining of frequent attacks of headache on the right side, depression, weakness of mental powers, and inability to fix her attention. There was previous history of nasal discharge from the right side, but none at present. She had lost all

desire for social affairs and only wanted to be left alone.

Nasal examination revealed a deviated septum to right, pressing against an inflamed middle turbinate. No pus was present in either the middle meatus or olfactory fissure.

Four per cent cocain solution was applied to the middle turbinate, and patient carried to the dark room for transillumination, which was negative for both frontal sinus and antrum. Escat's position was negative for pus. The nostrils were next irrigated with saline solution for cleansing purposes and the right antrum punctured. Irrigation of the antrum showed a small amount of pus. The nostril was again irrigated to remove any secretion that might be retained. This was followed by irrigation of the frontal sinus and anterior ethmoid, with negative results.

Diagnosis: Closed empyema of the right antrum.

Results: Irrigation negative after six weeks.

Case 2. Patient complained of dull aching pain in left cheek bone, which was at times slightly tender on pressure. There was considerable discharge from the left nostril. When the discharge increased, he experienced some relief from the pain.

Nasal examination revealed pus in the middle meatus and floor of left side. Middle and inferior turbinates were fiery red and swollen. Transillumination showed crescent shadow under lower eye-lid and over malar region. The usual procedures were carried out and the frontal excluded. Considerable pus was obtained from antrum.

Diagnosis: Open empyema of left antrum.

Case 3. Patient complained of frequent headache, which became almost constant at menstrual periods. The pain usually began in the supraorbital region on the right side, but there was no tenderness except at menstrual period. There was constant nasal discharge from the right side. Nasal examination revealed polypi in the middle meatus, attached to the middle turbinate. There was slight septal deviation to the right in region of middle turbinate with a spur in the lower anterior portion. No pus was seen.

Transillumination gave dark shadow over right antrum with absence of pupillary reflex. Both frontal sinuses showed dark but the right one was a little more dark.

Probable Diagnosis: Empyema of right antrum, frontal and ethmoid.

Anterior third of middle turbinate and polypi were removed, followed by discharge of offensive pus in the middle meatus. A few days later the antrum was irrigated and odorless pus washed out. The frontal sinus was then irrigated and offensive pus obtained. Third washing of antrum was negative, but pus continued in the frontal washings for two weeks.

Diagnosis: Empyema of right frontal sinus, with over-flow into antrum.

Case 4. Patient complained of intense headache of the vertex and occiput, with sudden blindness in the right eye. There was marked mental depression with inability to fix her attention. Considerable dizziness and nausea was complained of, but no vomiting. There was a marked subjective sense of odor.

Nasal examination showed pus and crust in the olfactory fissure, middle meatus and floor of right side, with yellow crust in the post-nasal space. Unable to locate sphenoid ostium, and probing was negative. Transillumination of frontal and antrum negative. No X-ray was made, but would have been of some help.

After irrigating the nose, the middle meatus was negative, but pus appeared in the olfactory fissure.

The entire middle turbinate was removed and the ostium of the sphenoid could be seen discharging pus. The anterior wall of the sphenoid was then removed and the cavity gently curetted, removing a considerable quantity of pus and granulations. No pus could be seen coming from the posterior ethmoids.

Diagnosis: Closed empyema of the right sphenoid.

Case 5. Patient sent to me with diagnosis of empyema of right antrum of dental origin. The first bicuspid and first molar had been removed and opened into the antrum; through these openings the antrum had been washed for about three months.

Nasal puncture and irrigation was done and the dental cavity closed by flap. This failed to hold, and a second and third flap were made, with the same result. Nasal irrigation was continued for several months with no apparent improvement. Frontal irrigation was not successful. A radical operation of he Caldwell-Luc modification was performed, with good results so far as the antrum was concerned, but pain in the frontal region con-

tinued and became rather severe. Pus continued in the middle meatus. There was a septal deviation to the right, which crowded the middle turbinate. Four weeks after the radical operation, I removed the anterior third of the middle turbinate. The frontal sinus was irrigated every day for two weeks, when it showed clear. Pain in the frontal region and behind the eye continued. X-ray of the posterior ethmoid showed cloudy on right side. Pus could be seen in the olfactory fissure every now and then. It was decided to operate for complete removal of the middle turbinate, and this will be done within the next few days.

Diagnosis: Empyema of the right antrum of dental origin, with secondary involvement of the frontal and ethmoid cells. The diagnosis of posterior ethmoid involvement was tentative. Diagnosis of disease of the individual sinuses can only be positive when the others are excluded by irrigation. This is the most important and only infallible diagnostic aid at our disposal.

I have seen numerous positive cases where most of the other findings were negative, and have seen negative cases where many of the other findings were positive. Transillumination and X-ray are often very helpful, but too much importance should not be attached to them unless other indications justify our suspicions. Pus in the middle meatus points to the frontal, anterior ethmoid, and antrum, while pus in the olfactory fissure is indicative of posterior ethmoid or sphenoid disease, but we should not be satisfied with our diagnosis until the individual sinuses have been irrigated and a positive or negative result obtained.

COMPLICATIONS INCIDENT TO THE OPERATIVE TREATMENT OF INFLAMMATORY DISEASES OF THE GALL-BLADDER.

By AIME PAUL HEINECK, M. D., Chicago, Ill.
Surgeon to the Frances Willard, Lakeside, St. Paul and Washington Park Hospitals.

During the last ten years, great advances have been made in the diagnosis and operative treatment of diseases of the gall-bladder and bile-ducts. Further improvement evidently is possible in diagnostic precision, timeliness and completeness of operative relief and obviation of recurrences. The unflagging inculcation of established facts and the combined efforts of internists, surgeons and laboratory workers have given us a more detailed understanding of the etiology, symptomatology, anatomical evolution and therapeutic indications of the various pathological processes of the biliary tract. Cholecystitis, acute and chronic, and its manifold complications call for operative relief. In the early stages of the disease, surgical therapy judiciously applied, will cure 66 per cent and improve 34 per cent of the cases which survive the procedure.[8] The study of the pathological processes of the upper right abdominal quadrant and of the operative procedures most suitable to this region has received a marked impetus from the beneficent results attending early operations. In inflammatory diseases of the gall-bladder and biliary passages, medicinal measures are almost always purely palliative; they are not curative. Dietetic, hygienic, physio-therapeutic and medicinal measures should precede, accompany and supplement the operative treatment of cholecystitis and its complications. To this dictum, there should be no exceptions.

Gall-stones, irrespective of size, number, nature and location, lodged or impacted in the gall-bladder, in the cystic, hepatic or common duct, or in a diverticulum, call for early operative removal. All collections of pus within the gall-bladder, bile tracts or in juxta-position to the biliary system, call for early operative evacuation.

For the relief of cholecystitis, cholelithiasis, obstruction of the cystic duct, pericholecystic adhesions, etc., two operations, cholecystostomy and cholecystectomy, are generally performed. These two operations, judged by the results obtained, possess merits and have their respective indications,[5] limitations, difficulties of performance, operative and post-operative accidents, morbidity and mortality.

Greater precision in diagnosis, early and timely operations, better operative technic and judicious pre- and post-operative management of gall-bladder diseases have extended the indications of cholecystectomy, lessened its operative difficulties, improved its immediate and remote results and contributed to its more frequent performance. The mortality attending timely gall-bladder operations, properly performed, is, at the present time, almost negligible. "During the eleven months from November 1, 1915 to October 1, 1916, we performed 776 cholecystectomies with a mortality of 1.77 per cent."[1] "The mortality following cholecystectomy in the treatment of cholecystitis

with or without stones is low, only 1.8 per cent in 2,460 operations performed during the period of three years."[2] "Forty-five cholecystectomies were performed for acute cholecystitis, with no deaths, and twenty-two cholecystostomies, with one death. There were eleven deaths in 890 cholecystectomies for chronic inflammation of the gall-bladder."[3] We feel confident that additional improvement is feasible. The best time to operate for the cure of gall-bladder and bile-duct disease is before the advent of irreparable anatomical changes. At this stage, the mortality should be less than 1 per cent[6] and complete recovery the rule. Cholangitis, choledochitis and common duct stone are late and serious complications, difficult of operative relief and sometimes fatal.

In this article we discuss the following operative and post-operative complications incident to surgery of the biliary tract:

(a) Incomplete disappearance of symptoms and recurrences;

(b) Post-operative adhesions;

(c) Operative and post-operative hemorrhage;

(d) Post-operative external fistulae (operative bile-duct injuries);

(e) Post-operative biliary peritonitis.

Incomplete Disappearance of Symptoms and Recurrences

In acute or chronic cholecystitis, primary or secondary, calculous or non-calculous, early or late, isolated or associated, the paramount indications are to arrest infection, remove inflammatory products, correct existing anatomical changes, restore liver function to normal, nullify the effects of disease sequelae and prevent the return of inflammatory disturbances. The avoidance of post-operative distress in all cases is more than one can reasonably expect.

By instituting operative relief at the onset of the disease, when the inflammatory process is still limited to the gall-bladder or before it has seriously involved, damaged or crippled any contiguous organ, one is far more likely to secure a complete and permanent disappearance of symptoms. The ideal time to operate is while the condition, local and general, of the patient is good. Early operation is easy of execution and forestalls complications; delay invites disaster. Delay permits the development of dangerous local and regional complications, viz., cholangitis, perforation, pancreatitis, common duct obstruction, etc., and may induce remote disturbances (vascular, cardiac and arthritic). The chief avoidable technical causes of incomplete cure are: Defective or improper technic; undue operative trauma; lack of thoroughness in the digital and instrumental exploration of the bile-ducts. In most instances, common-duct stones can be detected by introducing the finger into the foramen of Winslow and milking the choledochus between the fingers. No doubt, some recurrences are due to a calculus or calculi overlooked at the previous operation.

Diseases of the right hypochondriac and epigastric regions are insidious in development, are frequently unrecognized, not uncommonly misdiagnosed and often come to the operating table too late to be completely and permanently relieved. Tardiness of operative treatment is the main cause of incomplete cures and of recurring symptoms. The cases with advanced pathology are those that present a stormy post-operative course.

The increased popularity of cholecystectomy (84 per cent of patients after cholecystectomy are free from all symptoms[4]) is due to the fact that cholecystostomy often gives only incomplete and temporary relief. A successful cholecystectomy, followed by appropriate medical treatment, cures disturbances directly dependent on disease processes limited to the gall-bladder, prevents the extension of inflammation from this organ to contiguous organs and exerts a beneficent influence on local and regional inflammations due to or maintained by it: Hepatitis, pancreatitis, duodenal ulceration, etc. A retained diseased gall-bladder is a frequent cause of ill-health and a potential source of future trouble. It is a decided factor in the recurrence of gall-stones, of infective inflammation and in the persistence of local and regional symptoms, such as pain, indigestion, etc. Obstructive jaundice, either intermittent or chronic, developing after cholecystostomy is due to a stone or stones overlooked or reformed in the gall-bladder, lodging in the common bile-duct, to stricture or kinking of the choledochus, to fibrosis and traction of an adherent contracted gall-bladder, etc.

Deaver[7] states that 65 per cent of his recurrences could have been prevented by removal of the gall-bladder. Cholecystectomy often gives brilliant immediate results and eliminates the annoyance and discomfort incident to prolonged post-operative drainage. After cholecystostomy, the persisting symptoms are due

to residual pathology; after cholecystectomy, they are mainly of mechanical origin and often result from operative trauma. Careful examination of the cystic, hepatic and common ducts and the systematic removal of any duct obstruction, calculous or inflammatory, secures better results. The removal of all foci of infection, proximal or distal to the hepatic system (tonsillar, dental, duodenal, appendiceal, colonic, etc.), is essential to perfect health. Appendectomy is nowadays almost a routine procedure when operating on the biliary tract.

The physiology of the biliary system is intricate and our knowledge of the functions of the gall-bladder is as yet incomplete and indefinite. Therefore, the gall-bladder should never be removed in the absence of positive indications or if it be highly probable or evident that "it can come back." Though the human body, owing to its great power of adaptation, compensates for the loss (by disease or by removal) of the gall-bladder, the needless sacrifice of this organ is a mutilation and can lead to invalidism; it may prove fatal.

In a large number of cases recovery is gradual. In others, even in the hands of the most experienced and irrespective of the type of operation performed, permanent and complete relief is not obtained. The persistence and recurrence of symptoms are due to the patient's nervous instability, the existence of long-standing and advanced pathological changes not admitting of operative correction or removal, such as hepatitis, pancreatitis, etc., adhesions, operative injuries, inadequate pre- and post-operative treatment and metabolic disturbances. "Pancreatitis associated with or secondary to cholelithiasis has recurred after cholecystectomy and led to pancreatic cyst-formation."[9] A thorough knowledge of the technic and the respective indications and limitations of cholecystostomy and cholecystectomy will enable the operator to remove and to obviate most of the frequent causes of incomplete relief, such as impaired motility, elasticity and contractility of the gall-bladder, strictures or kinks of the cystic duct, adhesions of the pylorus, transverse colon or omentum to the gall-bladder or liver, duct obstruction, etc.

Post-Operative Adhesions

After gall-bladder and bile-duct operations, patients often complain of symptoms referable to adhesions existing between the gall-bladder and neighboring viscera. The operator must aim to minimize as much as possible the formation of peritoneal adhesions. In 3,000 abdominal operations, symptoms manifestly due to post-operative adhesions were present in from 10 to 12 per cent of cases; in 3½ per cent of these, operative relief was necessary (Payr).[11] It is important to differentiate between the pain, tenderness, mechanical interterference and other symptoms caused by adhesions of operative and post-operative origin and the neuro-psychogenic symptoms of post-operative neuroses, between adhesions, inflammatory in nature, and congenital peritoneal folds. Post-operative peritoneal adhesions, irrespective of nature or location, are due to such factors as: Infection, intraperitoneal hemorrhage, mechanical and chemical injury of the serosa, denudation of peritoneal surfaces, foreign bodies, such as gauze-drains, drainage tubes, etc.

Post-operative cholecystic and pericholecystic adhesions may follow simple as well as difficult operations. They are occasionally symptomless. Usually, they are provocative of persisting discomfort, permanent dysfunction and chronic obstructive disturbances. Patients with many pericholecystic adhesions can seldom be made entirely free from symptoms. Adhesions, by kinking or compressing the cystic or common duct, impede the flow of bile: biliary colicky pains and other distressing symptoms may result. When adhesions angulate or drag on the pylorus and duodenum, gas distress, gastric distention, spasm, vomiting and other digestive disturbances are likely to follow. Omento-cholecystic adhesions exerting traction on the greater curvature provoke painful gastric peristalsis.[10] The fixation by scar tissue of the pyloric end of the stomach or of the hepatic flexure of the colon to the liver is a not infrequent cause of gastric disturbances.

Innumerable methods and substances—liquid vaseline, sterilized olive oil, normal salt solution and non-absorbable membranes, such as rubber dam, collodion, oiled silk, etc.—have been recommended to limit, or to prevent the formation of peritoneal adhesions. They have all been found wanting. In the present stage of our knowledge, surgeons are not justified in using any of these agents in the peritoneal cavity. The absolute prevention of peritoneal adhesions is as yet an unsolved problem.

Adhesions are a frequent cause of incomplete relief, of failure to cure, of recurring in-

flammatory and obstructive disturbances, and all factors leading to adhesion formation are to be studiously eliminated. Adhesions being infectious, inflammatory and traumatic in origin, their incidence as to frequency and extent can be minimized by the practice of strict asepsis, the observance of great gentleness in all operative manipulations, the infliction of minimal damage to the tissues and the adoption of the technic most appropriate to the case at hand. We will also avoid such contributory causes as the use of chemical irritants, needless handling and exploring of organs, the undue exposure of the serosa to the air. We will endeavor to reduce intraperitoneal hemorrhage to a minimum, to limit, as to duration and amount, gauze or tubular drainage to the bare desideratum, and to cover with peritoneum all denuded surfaces. It is needless to say that the surgeon should operate with the greatest speed consistent with the patient's safety and thoroughness of execution. Chemicals, tincture of iodine, Dakin's solution, etc., cause the formation of adhesions by destroying the frail endothelium of the peritoneal surface. To inhibit the prolonged contact of denuded peritoneal surfaces, some advise the stimulation of peristalsis by purgation; others recommend that the patient's position be frequently changed.

Timely removal of gall-bladders presenting pathological changes minimizes the incidence, often prevents and suppresses cholecystic adhesions. It gives access to pericholecystic adhesions and may enable the operator to remove or forestall their sequelae. Nevertheless, the indiscriminate removal of the gall-bladder is unsurgical, dangerous, and is to be condemned. Cholecystostomy, with its associated prolonged drainage and possible escape of bile into the wound, leads to the formation of adhesions. Early removal of drains, gauze or tubal, is desirable. Bile-soaked drains excite the production of dense adhesions.

The removal of shrunken, atrophied, contracted gall-bladders or of those embedded in adhesions is difficult and leaves a raw surface which should, if feasible, be covered with an omental graft or by peritoneum. As much as possible, cover with peritoneum the fissure in the liver left by the removal of the gall-bladder and all other denuded areas, and thereby obviate to a very large extent the occurrence of troublesome adhesions. One or two fine catgut stitches joining the lesser omentum to the mesocolon, or fastening the great omentum into the hepatoduodenal angle, wards off dangerous raw surfaces and may insure against the attachment of adhesions to the more sensitive pylorus or duodenum. Dr. C. H. Mayo says we should avoid annoying and permanent disturbances "by forming your own adhesions," by bringing up and placing the great omentum between the liver and the contiguous denuded areas.

In cholecystostomy, the drainage-tube having been brought through the abdominal wall, preferably through a stab wound, the gall-bladder is dropped back to its normal position; thereby a source of post-operative discomfort is avoided. The anchoring of the gall-bladder to the abdominal wall is undesirable, unphysiological and not infrequently causes permanent distress. The recurring attacks of pain and tenderness and the dragging sensation in the region of the scar are often relieved by fomentations and massage.

In dealing with adhesions in the bile-duct region, the surgeon should be exceedinly circumspect in order not to injure the important structures that are present in this region. The gall-bladder may be so bound down by inflammatory adhesions as to make its removal inadvisable. It has been known to cap a perforated duodenal ulcer. A duodenal fistula[12] has been known to follow the separation of a gall-bladder adherent to the gut.

Operative and Post-Operative Hemorrhage

Operative and post-operative hemorrhage attending operations on the biliary system is an alarming complication and may prove most troublesome and difficult to control; it may end fatally.

In the absence of jaundice, hemostasis is effected by the methods ordinarily employed to arrest hemorrhage in other abdominal operations. In a non-jaundiced patient, hemorrhage, operative or post-operative, is usually easily checked if the operator be conversant with its various causes. What are these causes? Overlooked and non-ligated bleeding points, insecurely tied ligatures, premature absorption of ligature material, accidental tearing or section of normal or anomalous vessels not infrequently embedded in inflammatory tissue, and oozing resulting from the tearing of adhesions and the dissecting of the gall-bladder from its hepatic bed. It is essential that the operator secure an exposure of the operative field ample to enable him to identify the important structures present in this region. A suitable operat-

ing table, tilting or rotating, if possible, of the liver, wide retraction of the wound-edges and walling off of the intestines by gauze pads, all aid in securing a clearer view of and an easier access to the operative region. The incision should be adequate in length; it must permit the proper examination of the bile-ducts and the accompanying vessels. It is all-important that the operator be well versed in the topographical anatomy of the biliary region;[13] especially, should he be well acquainted with the normal and anomalous distribution of its blood vessels and the variations in the mode of union of the bile-ducts. Whenever feasible, excision should begin at the cystic end of the gall-bladder, proceeding from below upward and in the direction opposite to the lymph-field is less obscured by blood and perfect hemostasis more easily secured. The cystic artery lies above and behind and not along the side of the cystic duct and presents variations in number, origin, size, length, tortuosity and anatomical relations. A single cystic artery is present in 88 per cent of individuals; in 12 per cent, there are two cystic arteries. The bile-ducts are covered by plexuses of blood and lymphatic vessels.[14] If these be cut, troublesome hemorrhage may follow. If possible, isolate and ligate the cystic artery before it divides into its two branches and let it drop back away from the surface of the liver. In clamping the cystic artery, seize only the artery and its surrounding connective tissue. Should the knot or the forceps slip from or be pulled off the cystic artery, or should this same vessel or an important branch thereof be accidentally torn or cut before being grasped, profuse bleeding will occur. The indication is to immediately catch the bleeding point without injuring the bile-ducts. Compress the bleeding point with the forefinger and catch with a few mouse-toothed forceps the tissues about the forefinger. Then lift the forceps, remove the finger and clamp the artery. After all the bleeding points have been securely ligated and the hepatic oozing fairly well controlled by peritonization, gauze-tampons, etc., the operative wound is closed. Bleeding points in the abdominal wall are located, clamped and ligated without difficulty.

Post-operative bleeding from the cystic artery is to be recognized and controlled at once; if not checked, death may result from intra-peritoneal hemorrhage. When drainage has been used, blood appears on the dressings and is detected early; in the absence of drainage, it escapes into the peritoneal cavity and is only revealed by the symptoms of acute anemia. This argument is used by the opponents of cholecystectomy without drainage. Drainage provides an outlet for extravasated blood, escaped bile and inflammatory exudates.

Oozing hemorrhage is more frequent and more dangerous after cholecystectomy than after other laparotomies. The oozing comes mainly from the bed of the gall-bladder; it often is copious and very difficult to arrest. When removing the gall-bladder, incise its peritoneal coat in such a manner as to form two flaps of serosa. Use these to peritonize the denuded gall-bladder bed; if necessary, fix an omental graft to the raw liver surface. The cellular tissue between the gall-bladder and the liver is at times very vascular. In removing the gall-bladder from its bed, minimize hemorrhage by sharp dissection of this tissue and the least amount of trauma to the liver. The oozing of blood may be checked by the pressure of pads soaked in hot salt solution. If the denuded area be extensive and the oozing difficult to control, a gauze-pad is spread over the denuded hepatic area and extends from the stump of the cystic duct well beyond the liver. This is done to stop oozing and serve as a drain. In many cases a cigarette drain suffices. After cholecystostomy and cholecystectomy, the gauze packing is to be cautiously removed lest oozing recur from the gall-bladder bed and other denuded areas.

In the presence of severe obstructive jaundice, owing to the fact that the coagulation time of the blood is increased from three or four minutes to ten or twelve minutes or even longer, operations on the biliary tract are extra hazardous. Icteric patients, owing to their low general resistance and great liability to serious and, at times, fatal hemorrhage, should not be subjected to operations that are not immediately and absolutely necessary. The cholemic patient's great liability to hemorrhage must be foreseen; it necessitates appropriate and adequate pre- and post-operative care. Though cholecystectomy is incontestably the better operation as to the rapidity and completeness of cure, nevertheless, in cases of deep jaundice, it is better to do the minimal amount of operating and, therefore, to perform the lesser operation. Excision of the gall-bladder, if associated with much injury to the liver, may be followed by serious oozing from the

denuded liver surface. Cholecystostomy permits the slow decompressing of the liver by drainage through the gall-bladder; later, after the jaundice has subsided, the hepatic function has improved and the patient's resistance increased, the other therapeutic indications may be met.[17] When indicated operations can be safely postponed in jaundiced patients, they should be adjourned. "If the jaundice is just beginning to show at the time the patient presents himself for treatment, it may be best to operate without delay, but if he comes when the jaundice is decreasing, it is best to wait until it has disappeared or is at a standstill."[15] Operation should not be too-long delayed, as prolonged obstructive jaundice is a factor in the causation of biliary cirrhosis.

Before operating on cholemic patients, the coagulation time of the blood and its urea content are to be brought to approximately normal. It is also desirable that there be a normal total urinary output and an absence of albumin and casts. The existing hepato-renal insufficiency must be treated. Very frequently, one must operate in the absence of ideal conditions.

Horse-serum, defibrinated blood, etc., administered subcutaneously, decrease the clotting time of the blood. All our jaundiced patients, receive calcium lactate per mouth for several days before and after the operation. According to Lea and Vincent, the clotting time of blood is lowered by doses of calcium lactate taken by mouth each day for three days. In all cases of obstructive jaundice, our patients receive for three days preceding the operation a daily intravenous injection of 5 to 10 c.c. of a 10 per cent solution of calcium chloride in re-distilled water. Walters says that a 5 c.c. of a 10 per cent solution of calcium chloride in re-distilled water, if given intravenously for three days immediately prior to operation, brings the clotting time within normal limits despite a most intense jaundice. Blood transfusions (whole blood is preferable),[16] before and after operation, are useful in emaciated, depressed, jaundiced patients, often enabling them to successfully undergo the ordeal of a serious surgical operation. Blood transfusions, though valuable, do not have in obstructive jaundice the specific effect that they have in hemorrhage of the new-born. By applying, both before and after operation, dry and moist heat to the hepatic region, the activity of the hepatic cells is increased. The general condition of jaundiced patients can be much improved by the ingestion of large amounts of water per mouth, of normal salt solution subcutaneously and of glucose and sodium bicarbonate solutions rectally. The patient's carbohydrate balance should also be re-enforced.

Post-Operative External Fistulae

All, intermittent or chronic, post-operative external fistulae of the biliary tract should be treated operatively if they be attended with discomfort and health impairment and do not show any tendency to spontaneous closure. According to the nature of discharge, they are classified into mucous and biliary; according to the site of origin or internal orifice, into gall-bladder, cystic, hepatic and common duct fistulae. Persisting sinuses, due to careless technic, lost sponge, forgotten drain, etc., must be distinguished from fistulae.

External Mucous Fistulae.—Cholecystostomy intentionally creates a biliary fistula. In the absence of obstruction or stenosis of either the cystic or common bile-duct, such operatively-created fistulae heal spontaneously after a shorter or longer period. If the cystic duct be completely obstructed, the fistula becomes mucous in type and closes and opens intermittently until the cause has been operatively removed. Spontaneous permanent closure rarely occurs in mucous fistulae resulting from:

(a) Impaction of a calculus at the junction of the gall-bladder and cystic duct;

(b) Stenosis of the cystic duct following calculous or other traumatic ulceration;

(c) Compression of this same duct by cicatricial tissue, traumatic or inflammatory in origin.

The requisites for spontaneous healing are obliteration of the cavity of the gall-bladder and conversion of the organ into a fibrous cord or mass.

The removal of the entire gall-bladder is, in the absence of any common duct obstruction, the best treatment for a mucous fistula. The cause, origin and source of the fistula and the fistula itself are suppressed by cholecystectomy. In acute and chronic cholecystitis, when stenosis of the cystic duct due to traumatic ulceration is present, the ablation of the gall-bladder prevents the development of mucous fistulae. If the cystic duct and the gall-bladder show but slight alteration, it may suffice to remove the impacted stone. As a rule, this calculus is not of new formation; it was pres-

ent and overlooked at the time of the first operation. If the common duct be the seat of irremovable obstruction (partial or complete), the cystic duct and the gall-bladder are cleared of their contents and a cholecyst-enterostomy is performed. Of the three procedures just mentioned, ablation of the organ is the operation of election for the cure of mucous fistulae of the gall-bladder. Entero-cholecystic anastomosis is difficult of execution; it is a measure of last resort.

External Biliary Fistulae.—A safe and successful cholecystectomy necessitates an adequate exposure of the operative field and a careful exploration of the bile-ducts. If, at the time of the excision of the gall-bladder, calculi present in the common duct are overlooked, a biliary fistula not uncommonly results. Biliary nstulae due to calculous occlusion of the common bile-duct, if the duct be otherwise normal or almost normal, close upon removal of the occluding calculus or calculi. Biliary fistulae due to compression of the common duct by cicatricial tissue are cured by the removal of the compressing agent. An operator, unskilled and inexperienced in biliary surgery and possessing only a superficial knowledge of the many anatomical variations in the mode of union, length and course of the bile-ducts, is very liable to ligate, crush, cut or resect the hepatic or common duct. An incision ample in length permits identification and palpation of the ducts and minimizes their liability to injury. The cystic duct must be seen when ligated. The operator must see that he is tying it and nothing else. The vast majority of duct injuries are due to errors in technic or forgetfulness of the anomalies of this region. Bile-duct injuries are of more frequent occurrence if the topography of the biliary region is altered and distorted by adhesions.

In removing the gall-bladder, ligate and divide the cystic duct close to the choledochus and be careful not to traumatize the latter. In difficult cases, it is better to leave a stump of the cystic duct than to run the risk of injuring the common duct. Dilatation of the stump of the cystic duct is uncommon and most always of negligible clinical significance. Some biliary fistulae have followed too low ligation of the cystic duct. Incisions giving inadequate exposure of the operative field are responsible, in part, for injuries to the bile-ducts. "Working in the dark" begets poorer results and a higher percentage of complications. Under the most favorable conditions, the operative field is a limited one and important structures lie in such close proximity that accidents are not uncommon. Duct injuries are less common since retrograde cholecystectomy has come into more general use.

All bile-duct injuries should be repaired immediately, that is, at the time of infliction; if overlooked or improperly repaired, a biliary fistula or a biliary peritonitis follows. Spontaneous cure of serious bile-duct injuries is so infrequent that its occurrence, for practical purposes, can be disregarded.

The indications for operation are determined by the patient's general condition, the age of the fistula, the amount of discharge and the probability or non-probability of spontaneous permanent closure. The normal flow of bile into the intestines must be re-established; there must be a permanent passage-way for the bile from liver to intestines. Permanent biliary fistulae that discharge profusely entail loss of appetite, emaciation and, in time, death. Reconstructive bile-duct operations are failures when the line of suture yields or when a secondary stenosis or an ascending angiocholitis develops. In irreparable common duct injuries, the anastomosis of the gall-bladder to the stomach, duodenum, jejunum or colon is indicated. This indication cannot be met if the gall-bladder has previously been removed or if it be the seat of degenerative changes unfitting it for anastomosis. The anastomosis to the colon is a measure of necessity, performed only if the patient's condition be precarious or when the anatomical conditions present do not permit prolonged operative maneuvers. The saving of the bile to the organism improves digestion and avoids malnutrition. The physico-chemical functions of the bile are of value in intestinal digestion.

Slight parietal injuries of the hepatic or common duct are to be sutured. Complete or almost complete division of either of these conduits may be secured by circular suture of the divided ends with or without mechanical aids, such as a rubber-tube, glass-tube, etc., allowed to merge through a separate opening in the duodenum. The line of union is to be reinforced with omentum. In complete bile-duct division, it is difficult to find the proximal and, especially, the distal end, and it is still more difficult to successfully suture the ends to one another. Reconstruction of the bile passages is always a formidable procedure, even to the

most expert technician. The extent, location and nature of the duct injury, the associated pathology (dense, firm adhesions not easily separated, etc.) and the patient's general condition must all be considered so as to choose the operative technic most appropriate for the case at hand. When, owing to the length of the damaged area, the two ends of the duct cannot be apposed, the defect is to be bridged by inserting one end of the rubber-tube in the upper segment and then passing the other end through the lower segment into the duodenum; omentum or other tissue is sewed over the exposed portion of tube and reconstructed duct.[19] New canals built by the aid of inverted veins, fascial, omental or other tissue do not give lasting satisfactory results. These newly created ducts, not being mucous-lined and not being provided with a submucosa, invariably contract. If the distal end of the divided duct cannot be found or if it be unfit (too short, too friable, etc.) for end-to-end suturing, hepatico-duodenostomy,[18] the implantation of the proximal end of the hepatic duct into the duodenum and hepatico-gastrostomy, implantation of the proximal end of the hepatic duct into the stomach, are practiced. Both of these operations can be done upon a rubber-tube and direct suture.

Post-Operative Biliary Peritonitis

Circumscribed or diffuse post-operative biliary peritonitis is due, partly or wholly, to the escape of bile into the peritoneal cavity. When generalized, it is a serious complication. It follows the soiling during the operation of the operative field with gall-bladder and bile-duct contents or the leakage after the operation of bile into the peritoneal cavity. The site of leakage may be an oozing liver surface (gall-bladder bed), damaged or cut normal or anomalous bile-ducts, an improperly or insecurely ligated cystic duct whose ligatures have slipped, been torn off or absorbed prematurely. If the cystic duct be divided and ligated too close to the choledochus, the bile pressure may force off the ligatures; bile than escapes into the peritoneal cavity and biliary peritonitis results.

The prophylactic treatment of biliary peritonitis consists in the careful avoidance and successful removal of its etiological factors. By the aid of abdominal pads, the operative field is carefully walled off from the general peritoneal cavity, thus minimizing, at times preventing, the contamination of the latter by the escape of infected or non-infected bile. Before closing the operative wound, see that the cystic duct is securely tied by two ligatures and that all bile-duct injuries are rapaired. Fatalities due to overlooked duct injuries are not uncommon.

General peritonitis is always a possibility when drainage is omitted. For several days after cholecystectomy, oozing of serum, blood or bile occurs from the gall-bladder bed. Drainage prevents the accumulation of effusion in the peritoneal cavity and provides for the esecape of exudates. In practically all difficult operations on the biliary tract, I drain the subhepatic space and the renal wall. After empyema, rupture of the gall-bladder and, in cases in which hemostasis is not perfect, drainage for a few days is imperative. Healing is not unfavorably influenced by drainage and undesirable sequelae to be feared. Leakage is more frequent when the gall-bladder is removed from above downwards.[20] Walker states, "this is a further argument for careful isolation and ligature of the cystic duct and the removal of the gall-bladder from below." In many cases, it suffices to place a soft rubber tube or cigarette drain along the gall-bladder bed and to make it project through a stab wound in the loin or through a stab incision an inch or two to the right of the operative wound which is then closed. Experience has taught us that a stiff tube may cause much distress and a soft rubber one, actual danger through kinking and blockage.

The prophylaxis of biliary peritonitis is all important. This is due to the fact that the treatment of this affection, like that of other forms of acute peritonitis, is very unsatisfactory. The indications are to evacuate all bile collections, to check the further escape of bile into the peritoneal cavity and to accelerate the elimination of bile-salts from the circulation. To arrest the escape of bile, it is necessary to expose and repair the injured bile-duct and to drain the biliary region. Hypodermoclysis and proctoclysis are employed to combat the existing toxemia. These patients are very sick and unable to withstand any lengthy and complicated operative maneuvers. Symptoms are met as they arise by the usual measures.

Bibliography.

1. Mayo, C. H.: The Relative Merits of Cholecystostomy and Cholecystectomy. *Surg., Gynec. and Obst.*, 1917, xxiv, 281.
2. Mayo, C. H.: Jaundice and Its Surgical Significance. Collected Papers of the Mayo Clinics, 1919, xi, 116.

3. Judd and Lyons: The Mortality Following Operations on the Liver, Pancreas, and Biliary Passages—A Statistical Study. Collected Papers of the Mayo Clinic and the Mayo Foundation, 1923, xv. 217.
4. Martin: Recent Controversial Questions in Gall-Bladder Surgery. *Ann. Surg.*, 1924, lxxix, 424.
5. Heineck, A. P.: The Surgical Indications of Inflammatory Diseases of the Gall-Bladder.
6. Bunnell: Surgery of the Gall-Bladder. *Calif. State J. M.*, 1923, xxi, 287, 330.
7. Moore: A Comparative Study of the End-Results of Cholecystostomy and Cholecystectomy. *Surg. Gynec. & Obst.*, 1921, xxxiii, 41.
8. Graham: Surgical Therapy and Net Results in Gall-Bladder Disease. *Canad. M. A. J.*, 1922, xii, 767.
9. Ballin & Saltzstein: Pancreatic Cyst Following Cholecystectomy. *J. A. M. A.*, 1921, lxxvi[2], 1484.
10. Davis: What Constitutes a Good Result in Gall-Bladder Surgery? Tr. West. Surg. Assn., 1918, xxviii, 205.
11. Naegeli: Die klinische Bedeutung und Bewertung der abdominellen Verwachsungen. *Deutsche Ztschr. f. Chir.*, 1921, clxiii, 408.
12. Carroll: Complications Following Surgery of the Gall-Bladder and Bile Duets. *Minnesota Med.*, 1922, v, 307.
13. Eisendraht: Operative Injury of the Common and Hepatic Bile-Ducts. *Surg. Gynec. & Obst.*, 1920, xxxi, 1.
14. Bourgery et Jacob: Traite complet de l'anatomie de l'homme, 1839, v.
15. Judd: Problems in Surgery of the Gall-Bladder and of the Bile Ducts. *J. Kansas M. Soc.*, 1921, xxi, 185-189.
16. Jones: Blood Transfusion in Pernicious Anemia. *J. A. M. A.*, 1926, p. 1673.
17. Crile: Some Special Points in the Surgery of the Gall-Bladder. *Med. Rec.*, N. Y., 1920, xcvii, 584.
18. Balfour, D. C.: The Technic of Hepaticoduodenostomy, With Some Notes on Reconstructive Surgery of the Biliary Ducts. *Ann. Surg.*, 1921, lxxiii, 345.
19. Lecene et Gaudart: La reparation de la voie biliaire. *Journal de Chirurgie*, 1922, xx, 237.
20. Walker: Complications Following Cholecystectomy. *Boston M. & S. J.*, 1921, clxxxv, 52.

4455 *Greenwood Avenue.*

Correspondence

An Appeal to Physicians.

Richmond, Va.,
November 15, 1926.

To the Editor:

Within recent years everything in the Navy, except the health of the men behind our guns, has been investigated, published, and millions appropriated for improvement, and the only publicity incident to the country boy who volunteers to protect the Stars and Stripes has been the proverbial country-wide posters to obtain recruits. In the meantime, the records which repose in the archives will bear me out, that the Nation's selected youths are not only being pensioned for life, but deserting while on the sick list, and are dying of preventable diseases.

Our statistics from 1920-25, inclusive: 617,832 patients on the sick list; 12,604,225 days lost from duty; 33,140 invalided back to civil life; 4,839 died, either of disease or injury: 728 officers placed on the retired list, not due to age, but disease, 204 of whom were for tuberculosis; 1,540 enlisted men deserted while on the sick list. I estimate that the cost of medical supplies and maintenance of the sick costs upward of $35,000,000. The officers on the active list possess 7,295 physical disabilities, among them being blood pressure, defective vision, heart disease, rupture, etc.

The loss of only fourteen souls on the Shenandoah shocked the Nation, yet these staggering figures seem to give little concern. Pensions account of preventable disease is as much a burden relatively as the veteran disabled by shot and shell.

Sick sailors and crippled officers cannot defend the flag. Shall we close the door after the battleship has been sunk? The place for our marines is behind the guns, not on the sick list. To spend millions in air craft, and in the meantime, to witness the Nation's defenders walking the deck, suffering from earache and abscessed teeth, due to lack of specialists, is inconsistent. Desertions represent the wrong kind of initiative.

The fault rests with the system,—military rank in the sick chamber, lack of freedom of speech and publicity, accepting recent graduates in medicine, engaged in matters which could be executed by business men. The gap between the officer and the man in the ranks is too wide. I have made a survey halfway around the world, stating the reasons and remedies in two books which I ask you to assist me in getting before Congress. If the members of Congress who are physicians, would form a Health Committee, millions in money and human life could be saved. I hope that you will esteem it a privilege to write your congressman about this worthy cause, in the interests of humanity, economy, and the Nation's security.

W. Armistead Gills, M. D.,
U. S. Navy (Retired).

Womans Auxiliary Medical Society of Virginia

Report of Annual Meeting.

The Woman's Auxiliary to the Medical Society of Virginia was called to order by the President, Mrs. Southgate Leigh, on October 13th, at 11:00 o'clock, A. M., in the Tea Room of the Monticello Hotel.

The meeting was opened with an Invocation by Mrs. L. W. Scott.

Mrs. R. L. Payne, Sr., of Norfolk, gave a hearty welcome to the visitors, responded to most graciously by Mrs. T. J. Hughes, of Roanoke, Va.

The principal speaker of this occasion was Dr. Olin West, of Chicago, Secretary and General Manager of the American Medical Association. The Auxiliary was most fortunate in having Dr. West present and he gave a very interesting talk on "How the Auxiliary Can Best Serve The Medical Profession." He said in part, "I believe the Auxiliary is going to accomplish a great deal of good in the instruction of the public, and for the cause of scientific medicine." He urged the Auxiliary to stand behind the Health Department and especially to see that each doctor promptly reported each birth and each death. He said because of the lack of other organizations, it is the Auxiliary in the small rural districts which will do the best work, looking of course, to the State and National organizations for guidance. He was also very complimentary in regard to work being done in extending the circulation of *Hygeia*.

Dr. West's talk was followed by the reading of the Minutes, report of the Treasurer and the Corresponding Secretary. The President's report took the form of answering a much asked question "Why an Auxiliary?" and was so well received that the assembly ordered a copy to be made and sent to each County Auxiliary.

There was a splendid address by Mrs. Frantz Naylor, President of the Woman's Club of Norfolk. She gave an outline of the Auxiliary's work in public health in the Club, in which she stated the health program had already been adopted similar to that advised by Dr. West. Her principal talk was about the early history of Norfolk.

The report from the ten District Chairmen showed a marked increase in the Auxiliary work throughout the State.

The nominating Committee's report was read and the elections were as follows:

President—Mrs. Southgate Leigh, Norfolk, Va.

1st Vice-President—Mrs. Frances Whittle Upshur, Richmond, Va.

2nd Vice-President—Mrs. T. J. Hughes, Roanoke, Va.

3rd Vice-President.—Mrs. Don Peters, Lynchburg, Va.

Treasurer—Mrs. Joseph T. Buxton, Newport News, Va.

Secretary—Mrs. E. F. Truitt, Westover Ave., Norfolk, Va.

Standing Committees:

Education and Publicity—Mrs. T. J. Hughes, Roanoke, Va.

Hygeia—Mrs. Louis Berlin, Graydon, Ave., Norfolk, Va.

Legislative—Mrs. J. W. Preston, Roanoke, Va.

Organization—Mrs. Allison Hodges, Richmond, Va.

Parliamentarian—Mrs. R. L. Payne, Sr., Westover Ave., Norfolk, Va.

Let us beware of losing our enthusiasm. Let us ever glory in something—and strive to attain our admiration for all that would ennoble—and our interest in all that would enrich and beautify our life.—*Selected.*

The Truth About Medicine

In addition to the articles enumerated in our letter of September 25, tne following have been accepted:

B. B. Culture Laboratory, Inc.
Bacillus Acidophilus Culture (B. A. Culture).

Eli Lilly & Co.
Pertussis Vaccine—Lilly, 5 cc.
Scarlet Fever Streptococcus Antitoxin—Lilly (Refined and Concentrated), 1 syringe.

H. K. Mulford Co.
High Ragweed Pollen Extract—Mulford; Lamb's Quarters Pollen Extract—Mulford; Low Ragweed Pollen Extract—Mulford; Ragweed Pollen Extract (Fall)—Mulford; Timothy Pollen Extract (Spring)—Mulford; Water Hemp Pollen Extract—Mulford; Wormwood Pollen Extract—Mulford.
Butternut Protein Extract—Mulford; Cheese Protein Extract—Mulford; Cherry Protein Extract—Mulford; Cocoanut Protein Extract—Mulford; Crab Protein Extract—Mulford; Duck Protein

Extract—Mulford; Duck Feathers Protein Extract—Mulford; Garlic Protein Extract—Mulford— Ginger Protein Extract—Mulford; Goose Protein Extract—Mulford; Grape Protein Extract—Mulford; Grapefruit Protein Extract—Mulford; Haddock Protein Extract—Mulford; Halibut Protein Extract—Mulford; Herring Protein Extract—Mulford; Mustard Protein Extract—Mulford; Nutmeg Protein Extract—Mulford; Paprika Protein Extract—Mulford; Parsley Protein Extract—Mulford; Parsnip Protein Extract—Mulford; Peach Protein Extract—Mulford; Pear Protein Extract—Mulford; Pecan Protein Extract—Mulford; Pineapple Protein Extract—Mulford; Prune Protein Extract—Mulford; Raisin Protein Extract—Mulford; Shrimp Protein Extract—Mulford; Sole Protein Extract—Mulford; Tuna Fish Protein Extract—Mulford; Turnip Protein Extract—Mulford; Walnut (Black) Protein Extract—Mulford.

Scarlet Fever Streptococcus Antitoxin Concentrated (for the blanching test), 1 cc.

Parke, Davis & Co.

Ovarian Residue Soluble Extract—P. D. & Co.

Ampules Ovarian Residue Soluble Extract—P. D. & Co., 1 cc.

Richards, Inc.

Psyllium Seed—Richards.

Nonproprietary Articles.

Psyllium Seed.

CHANGE OF AGENCY

Siomine, formerly distributed by Howard-Holt Company, is now distributed by Pitman-Moore Company, which supplies ½ gr., 1 gr., 2 gr., and 5 gr. capsules. The Council has continued the acceptance of Siomine under the new distributor.

NEW AND NONOFFICIAL REMEDIES

Ipral.—Calcium ethylisopropylbarbituate. — Ipral has the therapeutic properties of barbituric acid, but it is soluble in water and is absorbed promptly. It is claimed that it is excreted rapidly, but some action persists for twenty-four hours. Ipral is used as a hypnotic to combat restlessness, irritability and sleeplessness. It is marketed in 2 grain tablets only. E. R. Squibb & Sons, New York.

Ampules Radium Chloride, 2 cc.—United States Radium Corp. (radium element, 50 micrograms).—For a discussion of the actions, uses and dosage of radium chloride, see New and Nonofficial Remedies, 1926, p. 302, "Radium and Radium Salts." United States Radium Corp., New York.

Ampules Radium Chloride, 2 cc.—United States Radium Corp. (radium element, 2 micrograms). For Drinking Use.—For a discussion of the internal use of radium chloride, see New and Nonofficial Remedies, 1926, p. 302, "Radium and Radium Salts." United States Radium Corp., New York. (Jour. A. M. A., Oct. 2, 1926, p. 1127.)

Ovarian Substance Soluble Extract—P. D. & Co.—A solution of an extract of desiccated beef and hog ovaries in physiological solution of sodium chloride, each cc. containing 4.04 Gm. of soluble extract. The actions and uses of ovary preparations are discussed in New and Nonofficial Remedies, 1926, p. 269. The product is marketed in 1 cc. ampules. Parke, Davis & Co., Detroit. (Jour A. M. A., Oct. 16, 1926, p. 1303.)

Pertussis Vaccine—Lilly.—(New and Nonofficial Remedies, 1926, p. 352). This product is also marketed in single 5 cc. vial packages containing 5,000 million killed bacteria per cc. Eli Lilly & Co., Indianapolis.

Scarlet Fever Streptococcus Antitoxin—Lilly (Refined and Concentrated).—(New and Nonofficial Remedies, 1926, p. 332). This product is also marketed in packages of one syringe (prophylactic dose) containing sufficient antitoxin to neutralize 150,000 skin test units. Eli Lilly & Co., Indianapolis.

Scarlet Fever Streptococcus Antitoxin Concentrated—Mulford.—(Jour. A. M. A., May 8, 1926. p. 1440).—This product is also marketed in single 1 cc. vial packages (for the diagnostic blanching test) containing sufficient scarlet fever antitoxin for five tests. H. K. Mulford Co., Philadelphia. (Jour. A. M. A., Oct. 23, 1926, p. 1393).

Pollen Extracts—Mulford.—In addition to the Pollen Extracts—Mulford described in New and Nonofficial Remedies, 1926, p. 33, the following products, marketed in 5 cc. vials containing 500 units per cc., have been accepted: High Ragweed Pollen Extract—Mulford; Low Ragweed Pollen Extract—Mulford; Water Hemp Pollen Extract—Mulford; also the following products marketed in packages of three 5 cc. vials containing, respectively, 250, 500 and 1,000 units per cc.: Lamb's Quarters Pollen Extract—Mulford; Ragweed Pollen Extract (Fall)—Mulford; Timothy Pollen Extract (Spring)—Mulford; Wormwood Pollen Extract—Mulford. (Jour. A. M. A., Oct. 30, 1926, p. 1479).

PROPAGANDA FOR REFORM

Ephedrine.—The Council on Pharmacy and Chemistry publishes a report on ephedrine. Ephedrine is an alkaloid first obtained in 1887. Chemically, it is closely related to epinephrine. Ephedrine hydrochloride and ephedrine sulphate are soluble in water. Ephedrine is claimed to produce effects similar to epinephrine. Its most important effects thus far reported consist in a rather lasting rise of blood pressure on intravenous or intramuscular injection. Clinically, promising results have been reported from the use of ephedrine, especially in asthma and for shrinking the turbinated bodies. The clinical trials which have been reported in this country have been carried out with ephedrine sulphate made in the Peking Union Medical College. The Council is informed that the Abbott Laboratories will shortly be in a position to supply a salt of ephedrine obtained from this source. Burroughs, Wellcome & Co., London, supply ephedrine hydrochloride for experimental purposes and have supplied the Council with a specimen of the product and the tests and standards used for its control. Eli Lilly & Co. has announced that it is marketing ephedrine sulphate, containing a small amount of pseudo-ephedrine, under the name "Fedrin." The Council is considering the question of recognizing the proprietary name for this product, and the evidence for its value and control. The A. M. A. Chemical Laboratory has taken up the establishment of standards for ephedrine hydrochloride and ephedrine sulphate. The Council has postponed the acceptance of ephedrine or its salts for New and Non-official Remedies to await confirmatory clinical evidence, and until acceptable brands of the drug are available. (Jour. A. M. A., Sept. 11, 1926, p. 849).

The Use of Codeine.—In a report by Dr. Carleton Simon to the Louisiana State Board of Health, it is stated that an extremely large quantity of codeine is consumed in Louisiana, but this, Dr. Simon believes, has no connection with addiction. Its use has been largely increased by the reduction in available heroin. In Dr. Simon's opinion, a connection between codeine and drug addiction has not been demonstrated, but the use of codeine may produce a familiarity with the action of narcotics. The use of codeine is held to be objectionable, also, in that it encourages the cultivation of the poppy plant and stimulates the importation of opium into the United States. (Jour. A. M. A., Sept. 11, 1926, p. 853).

Aurine Ear Balsam.—This is put out by the Aurine Remedy Co., Chicago. The main feature of the Aurine advertising is that Mr. Folds, who had "suffered fifteen years," was "relieved almost at once" by the balsam. Mr. Folds appears to be the manager of Aurine Remedy Co. The preparation sells at $2 per one ounce bottle. The A. M. A. Chemical Laboratory reports that the "balsam" is essentially a colored aromatic 66 per cent solution of glycerin, to which has been added a very small amount of boric acid and a local anesthetic resembling Butyn. This simple mixture is sold under the claim that no matter what ear ailment you may be suffering from, you will get relief if you will use Aurine. (Jour. A. M. A., Sept. 11, 1926, p. 867).

Universal Ban on Heroin.—The Interparliamentary Union will be called on at its meeting in 1927 to determine whether a universal ban shall or shall not be placed on diacetylmorphine (heroin), if a resolution adopted at a recent conference in Geneva is effective. The resolution was adopted on the initiative of Stephen G. Porter, chairman of the Committee on Foreign Affairs of the U. S. House of Representatives, one of the U. S. delegates to the conference. Mr. Porter cited the action of the House of Delegates of the A. M. A., in 1920, recommending that heroin be eliminated from all medicinal preparations and that its manufacture and sale in the U. S. be prohibited. Mr. Porter is convinced that at least one-third, or one-half, of the crimes of violence committed in the large cities of the U. S. by the so-called gunmen and others are committed by heroin addicts. (Jour. A. M. A., Sept. 18, 1926, p. 944).

K-17 or Rattlesnake Oil, Debarred from the Mails.—The Greene Laboratories (which were not laboratories at all), was a trade name adopted by Cooley H. Greene and his wife, and the business consisted in the advertising and sale through the mails of an alleged cure for deafness called K-17, formerly known as Rattlesnake Oil. The stuff was manufactured by George A. Breon, Kansas City, who, presumably, is the same George A. Breon, who comes to the medical profession in the guise of a manufacturer of alleged reputable pharmaceutical products. On April 3, 1926, a fraud order was issued, debarring the Greene Laboratories and C. H. Greene from the use of the mails. (Jour. A. M. A., Sept. 18, 1926, p. 959).

The Standardization of Insulin.—Several international conferences in relation to the standardization of insulin have been convened by the health organization of the League of Nations. At the last conference approved methods of bio-assay for insulin were adopted, and the unit as provisionally defined by the Insulin Committee of the University of Toronto was accepted. (Jour. A. M. A., Sept. 25, 1926, p. 1040).

Numoquin Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that Numoquin is the proprietary, non-descriptive, therapeutically suggestive name under which Merck & Co. markets ethylhydrocupreine. Ethylhydrocupreine is a synthetic derivative of cupreine, an alkaloid occuring together with quinine in cuprea bark. The Council reports that ethylhydrocupreine has the antimalarial and anesthetic action of quinine, but that toxic symptoms are more liable to occur. Merck & Co. advertise Numoquin for use in the treatment of pneumonia. The evidence for this recommendation is practically of no value. The Council found Numoquin unacceptable for New and Non-official Remedies because the drug is marketed with unwarranted therapeutic claims and under a name that is therapeutically suggestive. (Jour. A. M. A., Sept. 25, 1926, p. 1055).

Yeastone (Merck & Co.)—The advertising circular claims that Yeastone is "useful in chronic constipation, digestive disorders, acne, furunculosis and in the deficiency diseases" and asserts that "in therapeutic activity a 1½-grain pill corresponds to one yeast cake." New and Non-official Remedies, 1926, under "Yeast Preparations," discusses the propaganda that has been made in favor of the therapeutic use of vitamin B preparations, and states that "at all events, the alleged curative or tonic value of special vitamin B bearing products has been emphasized through widespread advertising to an extent unjustified by available evidence." A report of the Connecticut Agricultural Experiment Station reports feeding trials with Yeastone: "No satisfactory growth was secured in any of the trials. Two cases developed polyneuritis, one of which was acute. The results do not show any merit in the product from the standpoint of water-soluble B vitamin." (Jour. A. M. A., Sept. 25, 1926, p. 1055).

Lavex.—Lavex is known to the public best as an alleged cure for "catarrh." It is put on the market by the Lavex Chemical Co., Kansas City. Lavex appears to be a new name for what used to be called "Maignen's Antiseptic Powder," on which the Council on Pharmacy and Chemistry published a report in 1914 and, which, in 1915 the government declared misbranded because of false and fraudulent claims. Now the Post Office has put a stop to this profitable fraud by debarring from the mails the Lavex Chemical Co. and W. R. Smith, the vice-president and secretary. Lavex is put up in the form of a powder, a white tablet and a pink tablet. Other preparations containing practically the same ingredients as those contained in the "Lavex" powder are sold under the names "Lavex Vitamines," "Lavex Pyorrhea Remedy," "Lavex Hayfever and Rose Cold Treatment," "Lavex Cold Remedy," "Lavanio Douche Powder," "Lavex Stomach Tablets," and "Lavex Throat Tablets." The ingredients of the principal preparation, "Lavex" powder, as furnished the Post Office inspector by the promotors are as follows: Water-slaked lime 15 parts, sodium carbonate (soda ash) 15 parts, boric acid 3 parts, aluminum sulphate 2 parts, perfume. (Jour. A. M. A., Oct. 9, 1926, p. 1232).

Physical Therapy.—The Council on Physical Therapy of the American Medical Association publishes a report on the present status of physical therapy. The Council cautions that while there are certain definite indications for the use of some one or a combination of several physical agencies in the treatment of disease, it is harmful practice to depend on these agencies alone, to use them in place of better proved methods, or to employ them without having first thoroughly studied the patient from the standpoint of diagnosis. The Council warns against the indiscriminate use of physical measures and the danger that their use may lead into dishonest practice or quackery. The physical measures that have been found to have certain therapeutic value include: 1. Heat, Natural and Artificial. 2. Hydrotherapy. 3. Light. 4. Electricity. 5. Massage. 6. Therapeutic Exercises. The Council feels that the following considerations must receive the most careful attention of the medical profession: 1. Physics, physiology and biochemistry must be called on to dispel the empiricism of the past and to prove the value of various physical agencies. 2. Physical therapy must be recognized as a definite part of medicine, practiced and controlled by graduate physicians. 3. Since physical therapy is a definite part of medicine, every medical school should give thorough training in this subject. 4. Persistent, prolonged effort must be made to eradicate the abuses of physical therapy. The Council proposes

to point out to the medical profession the advantages and the disadvantages of physical therapy so that its abuses may be reduced to a minimum, and its scientific possibilities may be appreciated. (Jour. A. M. A., Oct. 16, 1926, p. 1302).

The Campaign Against Nostrums in Central America.—A Nicaraguan pharmaceutic journal refers to the efforts made in Nicaragua to protect the public against nostrum exploitation, pointing out that such products are manufactured in the U. S. only for exportation, their use being forbidden at home. The blame is placed on American "manufacturing houses which take advantage of the lack of protecting laws as well as the unscrupulousness of dealers." The protest is accompanied by the publication of the names of forty preparations whose sale has been recently forbidden in Guatemala. (Jour. A. M. A., Oct. 16, 1926, p. 1307).

Toxivi and Toxok Not Acceptable For N. N. R.—The Council on Pharmacy and Chemistry reports that according to the Cutter Laboratory, Berkeley, Cal., Toxivi is stated to be an extract of *Rhus toxicodendron* for use in the prophylactic and therapeutic treatment of dermatitis caused by poison ivy. Similarly, Toxok is claimed to be an extract of *Rhus diversiloba* for use in prophylactic and therapeutic treatment of dermatitis caused by poison oak. The Council found Toxivi and Toxok unacceptable for New and Nonofficial Remedies, because the statement of their composition and strength is indefinite; because the claims advanced for them are not warranted, and because they are unoriginal preparations marketed under proprietary nondescriptive names. (Jour. A. M. A., Oct. 16, 1926, p. 1321).

Harrower's Organotherapeutic Indicator.—To advertise its pluriglandular products, the Harrower Laboratory uses a device containing an "indicator" in the form of an arrowhead, the shaft of which is a slot in a disk, superimposed on a larger disk. Around the edge of the larger disk are the names of some seventy diseases or disease conditions. When the arrow is rotated to point to any one of these names, one or two numbers become visible through the slot: these refer to the list of "pluriglandular formulas" on the back of the disk. Each condition has its appropriate (?) formula. The Council on Pharmacy and Chemistry has reported on a number of Harrower gland mixtures, pointing out the lack of evidence for their efficacy when given by mouth and also the irrationality of prescribing mixtures that resemble those of the old fashioned shotgun nostrums. The fact that it is apparently profitable for the Harrower Laboratory, Inc. to send out such advertising as that described, is a sad reflection on those physicians who allow themselves to be influenced by "literature" that is sent out by commercial houses. (Jour. A. M. A., Oct. 16, 1926, p. 1322).

Potassium Chlorate Tablets.—The saturated solution of potassium chlorate has been much used as a mouth wash in stomatitis. It is also employed as a gargle in the treatment of pharyngitis. Its value in these conditions is, however, uncertain. Holding tablets of potassium chlorate in the mouth gives a more thorough medication and probably does no harm if one tablet is used at intervals of an hour or two. The internal use of potassium chlorate is no longer recommended. Large doses are actively poisonous. (Jour. A. M. A., Oct. 16, 1926, p. 1323).

Vaccine Treatment of Colds.—It is not definitely known whether or not a cold is the result of a specific infectious process. The prophylactic as well as the curative value of vaccine therapy in this condition is therefore quite problematic. What we know about the nature of the affliction makes it highly improbable that much good can be accomplished by means of vaccine, and clinical experience seems to substantiate these deductions. (Jour A. M. A., Oct. 23, 1926, p. 1412).

Book Announcements

The Medical Record Visiting List or Physician's Diary for 1927. Revised. New York. William Wood and Company, Publishers. Flexible leather substitute in red or black with gilt edges. Size 6½ by 3¾ inches. 30-patients per week size, $1.75; 60-patients, $2.00; 90 patients, $2.50. Name stamped in gold, 25 cents extra; name and address, 50 cents. Postage prepaid.

This book contains in addition to the visiting list and memoranda pages a number of tables which will be found useful for ready reference. The various tables of dosage, etc., have been carefully revised in accordance with the latest revised edition of the U. S. Pharmacopeia.

Life Insurance Medicine. A study of Its Problems and Their Relation to Clinical Medicine. By MEMBERS OF THE MEDICAL DEPARTMENT OF THE NEW ENGLAND MUTUAL LIFE INSURANCE COMPANY. Volume I. Published by New England Mutual Life Insurance Co., 87 Milk Street, Boston, Mass. 1926.

The Human Body. By MARIE CARMICHAEL STOPES, Doctor of Science, London; President of the society C. B. C. and Racial Integrity, etc. G. P. Putnam's Sons. New York and London. The Knickerbocker Press. 1926. 8vo of 268 pages with 53 illustrations and color plates. Price $2.50.

Human Pathology. A Textbook by HOWARD T. KARSNER, M. D., Professor of Pathology, School of Medicine, Western Reserve University, Cleveland, Ohio. With an Introduction by SIMON FLEXNER, M. D. Philadelphia and London. J. B. Lippincott Company. 1926. 8vo of 980 pages. 29 illustrations in color and 448 in black and white. Cloth. Price $10.00.

A Sound Economic Basis for Schools of Nursing and Other Addresses. By MARY ADELAIDE NUTTING, R. N., M. A., Principal of the School of Nursing and Superintendent of Nurses, The Johns Hopkins Hospital School of Nursing, Baltimore, 1894-1907. Professor of Nursing and Health, Teachers College, Columbia University, 1907-1925. G. P. Putnam's Sons, New York and London. The Knickerbocker Press. 1926. 8vo of 372 pages. Price $2.50.

The Scientific Basis of Chemotherapy. By IWAN I. OSTROMISLENSKY, Ph.D., M. D., Formerly Director of the Chemotherapeutic Section of the Scientific Institute, Glavchimfarmzaw, Moscow. New Dualistic Theory and Its Relation to Ehrlich's Theory of Side-Chains. Mechanism of the Curative Action of Salvarsan Preparations, of Quinine and of Pyridium. Theoretical Hyper-Salvarsan. Elemental Postulates of Rational Therapy, etc. New York. 1926. 142 pages. Paper. Obtainable from the author, 280 Broadway, New York City.

Virginia Medical Monthly

FOUNDED BY LANDON B. EDWARDS, M. D., APRIL, 1874.
OWNED BY THE MEDICAL SOCIETY OF VIRGINIA.
PUBLISHED BY THE PUBLISHING COMMITTEE.

A. G. BROWN, Jr., M. D., Chairman, Richmond, Va.
B. R. TUCKER, M. D., Richmond, Va.
P. W. HOWLE, M. D., Richmond, Va.
E. L. KENDIG, M. D. Victoria, Va.
A. L. GRAY, M. D., Richmond, Va.

ALEX. G. BROWN, Jr., M. D.,
Editor.

AGNES V. EDWARDS,
Business Manager and Secretary-Treasurer.

All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $2.00 per annum in advance.
Single Copies 20c.

VOL. 53. DECEMBER, 1926 No. 9

Editorial

Diabetes Mellitus and its Inter-Locking Maladies.

Obesity and infection are often dual factors in the pathogenesis of diabetes. The excessively fat and prolongedly infected body, from one or both of these abnormalities, may become pathologic in many ways. But these factors, combined or alone, obtain as etiologic ones in most cases of diabetes. And they usually exist in the body a long time before clinical diabetes appears. Likewise, before and after the diabetic era, these etiologic factors, added to true diabetic pathologic elements, bring about certain inter-locking degenerations in the diabetic body. And, remarkable to note, patients who have had diabetes for years die (particularly now that insulin holds in leash so successfully its *bete noire*, coma) from diseased states clearly outside of diabetes mellitus itself. So it is, that chronic hyperglycemia with all that that means, chronic hyperalimentation, and chronic infection bring about collateral degenerative diseases. Clinicians have long recognized this: one must deal, in the treatment of diabetes, with a group of complicating factors. Often these degenerative maladies play a paramonnt part in the problem of prolonging life tenure. But after all, these inter-related maladies of diabetes are best controlled through the management of diabetes. For as blood sugar and metabolism approach a normal, through dietetic and insulin treatment, in diabetes, complications are best in hand. It is then, through control, so far as possible, of the diabetic state, one finds basic therapeutic measures by which to defer death from the degenerative maladies of diabetes, as well as from the toxic death of diabetic coma.

In order to emphasize the importance now, in these days of insulin, of degenerative diseases in diabetes, one might note necropsy findings in fifty-eight fatal cases of diabetes as reported by Wilder*, of the Mayo Clinic. There were eighty-one deaths at the Mayo Clinic, in two thousand four hundred and sixty-nine cases of diabetes, treated in the period of six years preceding October, 1925. Of the eighty-one deaths, thirty-three occurred following operations. Diabetic coma was the apparent cause of death in nineteen cases without having had operation and four died in coma after an operation. But interesting to observe, since the discovery of and use of insulin, only four deaths from coma have occurred and no death from coma after an operation. The majority of these patients were fat and were more than fifty years in age. Remarkable to say, in this series of diabetic deaths, only ten died as a result of diabetes alone. The causes of death in the remainder were degenerations and operations. Necropsy was performed upon fifty-eight of the eighty-one fatal cases and the following items of pathology were noted by Wilder: gall-stones in sixteen; pancreatic stones in three: sclerosis of kidneys in fourteen: diffuse kidney disease in four: arteriosclerosis in nearly all who were over forty years of age; gangrene in fourteen: coronary sclerosis and myocardial degeneration in 75 per cent of the hearts examined: exophthalmic goiter in four. Pancreatic changes were of interest: fatty changes in the islands were noted in eleven. In some of the severe cases of diabetes, pancreatic lesions observed at necropsy were trivial: in mild cases of diabetes, in some instances, coming to death from complications, pancreatic lesions were severe.

Diseases of the Liver and Pancreas in Diabetes.

One should keep well in mind liver function when dealing with diabetes. Bile formation and bile flow, carbohydrate storage function, urea function, and the fat function of the liver, all, have an added functional requirement in diabetes mellitus. The unbal-

*Wilder: Collected Papers of the Mayo Clinic, 1925, XVII, page 544.

anced ration, with its low carbohydrates, its maximum proteins, and its high fats, requires of the liver a wide range of compensatory function. The liver functions are all strained in diabetes. Besides, in diabetes, complications of chronic infections of the gall-tract with or without the formation of gall-stones, coincident hepatitis, that so often is found, make for additional complicating possibilities. Every diabetic may be suspected of having hepatic complications in acute or chronic form, in one way or another. The more chronic the diabetes, the more degenerative the complication.

The pancreas, also from a like point of view, demands a foremost place in the thoughts of the clinician as he considers the complications of diabetes as well as diabetes itself. The excretory function of the pancreas, so largely influenced and stimulated by the bile output, exerts a crucial influence upon the essential digestion of the physiologically disproportioned diabetic ration; starch, protein and fat. The enzymes of pancreatic secretion or juice are vitally needed in intestinal digestion, because without them enteric digestion is abridged, disordered, if not materially prevented. Such a curtailment of caloric values through shortage in the digestion, adds its modicum of trouble in diabetic pathology.

The insulin function, besides, of the pancreas assumes a place of first importance in contemplating the pathology of diabetes, mild or severe. Degenerative disease of the islands, held in check, revived r relieved by present-day treatment, affords the only hope for an increase of carbohydrate tolerance and for bringing about clinical improvement. The pancreatic pathology found at necropsy is well illustrated by Wilder's findings above noted, as well as by Osler's who found in fifteen autopsies nine cases of morbid pancreatic degeneration: fatty, hyaline, and interstitial degeneration.

Cardio-Vascular Pathology in Diabetes.

Necropsy and the clinical course of cases of diabetes show a frequent association of serious cardio-vascular pathology. Death may result and clinical symptoms may arise, not so directly from the diabetes, but from pathologic progression in the cardio-vascular system. This disease complex renders the problems of management doubly difficult. While internal medicine abounds in many such interesting disease relationships, in no other is the situation more filled with complexity and difficulty. Corrective efforts in a supposed primary malady, may or may not be the surest therapeueic route to follow for the purpose of relieving the supposed secondary or complicating pathology. But, as a generalization, the present day management of diabetes with diet and insulin, whereby the blood sugar level is made to approach nearer normal, urinary findings to become freer of sugar and ketones, and metabolic balances to be better maintained, offers the most successful therapeutic opportunity for relieving symptoms and for holding in check progressive degenerative pathology in the cardio-vascular system. Morbid anatomy of diabetes shows no constant lesions in the heart or arteries. Surprisingly numerous, however, are the diabetic patients who show signs or symptoms of heart disease during life, and at necropsy, evidence of myocarditis. Cases of cardiac hypertrophy and dilatation, coronary sclerosis and coronary thrombosis are not infrequently observed in diabetics. The heart of the diabetic is worthy of careful scrutiny. The same is true of the general vascular system. As noted by Wilder, arteriosclerosis is very frequently in evidence. Obliterative thrombosis of peripheral vessels shows in gangrene and perforative ulcerations.

Likewise, pathologic findings at post mortem, as well as from clinical observations, disclose a frequent combination of diabetes and Bright's disease. Nephritis in several forms is found accentuated by diabetes, making the complexity of the therapeutic problem more intricate; for here the situation is one of impaired renal function with its retention of urinary solids as well as hyperglycemia. In such a pathologic dilemma, fatality may eventuate not from diabetic coma, but from uremic coma, or both. Post mortem examinations of diabetic kidney cases show diffuse nephritis with fatty degeneration, with hyalin changes often found in tubal epithelium as noted in autopsies by Osler and others.

Syphilis, Tuberculosis, Pneumonia and Blood Infection in Diabetes.

These infections in the diabetic create speedy complicating pathology and a rapidly malignant toxemia which renders prognosis imminently ominous. In the syphilitic diabetic, administration of "specific" treatment is closely related to an adequate antecedent administration of diet and insulin. Insulin computations

and caloric dietary calculations, balanced to meet the diabetic situation, precede in importance intravenous arsenical or mercuric specifics. However, as always, individual exigencies determine the order of treatment when pathologic and metabolic problems seem to be at such cross purposes.

Again, in tuberculous diabetics and in pneumonia in the diabetic patient, metabolism is the fundamental problem. The pathology of these complications moves with steady and rapid progress. So it is in blood infection and in operative procedures in diabetes. This is strikingly emphasized by Wilder's observation on the effect of insulin upon the death rate by coma in cases of diabetes operated upon at the Mayo Clinic.

A. G. B., JR.

The Koch Cancer Cure.

The dictum of Barnum that the American people love to be humbugged seems true; certainly when this statement is applied to cults and charlatanism there can be no doubt of its accuracy. From the days of the Thompson tractors and the "electropois" to Abrams' electronic treatment and the present day of chiropractic and specifics for cancer,—through all of this there seems to run the same general principle of Barnum, else they could not have existed.

A pamphlet issued by the American Medical Association called "The Koch Cancer Treatment" contains the essential facts about Koch and his treatment. It will be mailed to any doctor writing to the American Medical Association, 535 North Dearborn Street, Chicago. It seems strange that the contents of this reprint are so little known, particularly when we find the bulletin of the Koch Cancer Foundation widely distributed to the medical profession and being received with as much seriousness as if it proceeded from the greatest scientists in the world. This pamphlet of the American Medical Association goes very fully into the history of the so-called treatment of Koch, quoting editorials in the *Journal of the American Medical Association* and giving extracts from reports of committees that have investigated the treatment, as well as the details of the financial arrangement. Those interested should see the full reprint. A few of its important features are quoted.

It seems that Dr. William F. Koch, of Detroit, graduated in medicine in 1918 at the Detroit College of Medicine and Surgery. Previous to this he had been an assistant in physiology and an instructor in histology in the University of Michigan Medical School, as well as professor of physiology in the Detroit College of Medicine and Surgery. He had never been a professor in the University of Michigan. Less than a year after his graduation in medicine, Dr. Koch announced that he "had developed a real specific cure for cancer." It was claimed that he had developed a differential poison that would destroy the "cancer germ" without injuring the host. During the seven years since this announcement Koch has kept his remedy secret.

Naturally the medical profession and patients suffering with cancer are interested in the results. While it would be desirable not to keep the remedy secret, if it can cure cancer victims should have the benefit of it.

The Wayne County Medical Society, of Detroit, Michigan, has on three separate occasions appointed a committee to investigate Koch's work. In each instance the report was unfavorable. The last report published in the Bulletin of the Wayne County Medical Society, June 30, 1924, was by the Cancer Committee of this society. This Committee met at Dr. Koch's office on November 5, 1923. Nine patients were chosen by Dr. Koch as representing his cures and were demonstrated to the Committee. Some of them had been previously described in an advertising booklet called "St. Mark's Sanitarium Bulletin" which was distributed to the public. In addition to these nine cases submitted by Dr. Koch to the entire Committee, two members of the Committee carefully examined four additional cases. Of these thirteen cases, which presumably represented the best results Koch could secure, no single one seemed to prove any efficacy of Koch's serum. The patients had either received X-ray or radium treatment previous to having had the Koch serum, or else had not been satisfactorily demonstrated as cancer cases before the treatment. Take the last four for instance:

"Case No. 10.—Myxosarcoma with no results from Koch's treatment.

"Case No. 11.—Hypernephroma with no results from Koch's treatment.

"Case No. 12.—Non-malignant tumor of ovary. Treated by Dr. Koch for cancer.

"Case No. 13.—Hopeless metastatic teratoma

of testis. Died soon after Koch's treatment."

The report of the Committee closes with the following statement:

"Out of the hundreds of cases Koch has probably treated, these were demonstrated to us as his best results. In no instance have we found a case where the diagnosis of cancer was absolutely established and where no other form of treatment had been used in which a cure or any decided benefit had ever been obtained."

The *Journal of the American Medical Association* has received hundreds of letters from physicians and laymen inquiring about the Koch remedy. Some mention individuals who were taking or who expected to take the Koch treatment for cancer. From the addresses given in these letters the officials of the *Journal of the American Medical Association* wrote to the individuals mentioned. Only a few of them have answered, and the pamphlet gives the essential points in eleven of these answers. These three are typical of the eleven:

"Dr. B., New York.—Had three patients who took the Koch treatment. (1) Woman with carcinoma of rectum; 'received four injections, reactions were terrible. She did not improve but steadily became worse and died.' (2) Elderly man with beginning cancer of stomach; was 'given two treatments and promptly became worse and died.' (3) A case of axillary carcinoma received many treatments; 'Ultimate result was the same—death.'

"Dr. F., Mississippi.—Wrote in January, 1925, that patient with carcinoma of the stomach had received the Koch treatment. Reported in March, 1926, that patient died five months later. Reports also in his last letter the case of man with carcinoma on the side of the nose; took Koch treatment in August, 1925; at the present time the cancer 'is more than twice as large as it was at the time of the treatment.' Reports also that another patient with carcinoma of the cheek received the first Koch treatment in August, 1925, the patient is now 'down in bed and not expected to live.'

"Dr. K., Nebraska.—Wrote in May, 1925, that 'cases of cancer in this vicinity have been treated by means of the (Koch) serum with no results.' Reports in April, 1926, on three cases: (1) Sarcoma in boy of 14, took Koch treatment and died. (2) Patient with carcinoma of pylorus; took treatment and died. (3) Patient with carcinoma of rectum with metastases; took treatment and died."

In February, 1926, the Koch Cancer Foundation, with William F. Koch as "Director," was established and the members of this foundation are as follows:

Frederick Dugdale, M. D.,
C. Everett Field, M. D.,
A. W. Hoyt, M. D.,
W. Wallace Fritz, M. D.,
Elnora C. Folkmar, M. D.,
Lorenz L. Dill, M. D.,
Albert Lynch, M. D.

The American Medical Association analyzes the records of these men and gives photostatic reproductions of newspaper notices or advertisements of Dr. Frederick Dugdale, of Dr. W. W. Fritz and of Dr. Lorenz L. Dill, together with brief biographic notes on all of them. Dr. Dugdale advertised as a specialist in "rheumatism, cancer, chronic blood and nervous diseases." Dr. Hoyt was one of the disciples of the electronic reactions of Abrams and appears to have been interested in the "Auto-Hemic Serum" of Rogers.

Dr. Fritz has after his name the letters M. D., D. D. S., N. D., D. O., D. C., indicating that in addition to being a doctor and a dentist he is a naprapath, an osteopath and a chiropractor.

Dr. Dill graduated from the Homeopathic Medical School in 1910. In 1924 he espoused the cause of the Koch cancer cure, and sent out printed cards bearing the map of Indiana, showing how the Logansport Cancer Institute, of which he was a director and where the Koch Cancer Treatment was given, could be reached. His statements implied that the Koch nostrum possessed the same scientific value in the treatment of cancer as the antitoxin of diphtheria did in the treatment of diphtheria.

Dr. C. Everett Field, of Brooklyn, has been recently dropped from his county medical association.

Dr. Folkmar is one of the lessees of Abrams "Oscilloclasts" and an exploiter of "Bio-Dynamo-Chromatic-Diagnosis."

Dr. Lynch was apparently connected with the Koch organization almost from the beginning.

There has also been organized what is known as the Koch Laboratories, Inc. The incorporators are as follows:

William F. Koch, President and Director.

Louis Koch, Vice-President and Director.
Fred C. Koch, Treasurer and Director.
Clarence Lehr, Secretary and Director.

There is said to be a contract between the Koch Laboratories and the Koch Cancer Foundation by which the antitoxin shall be distributed through the Foundation only to the stockholders and members. The price of the treatment from the Foundation shall be $110 to both stockholder and member. "According to a statement made by Dr. J. W. Stiers, of Muscatine, Iowa, (who in 1924 was said to be using an apparatus put out by the 'Electronic Research Laboratories' and is now apparently using the Koch 'antitoxin'), the Foundation specifies as a minimum $300 for the first treatment and $200 for any afterward. The difference between the price charged the Koch disciple ($110) and the price the disciple charges the victim ($300) is presumably to cover the risk assumed by the followers of Koch in injecting a secret mixture into the cancer patient."

"The by-laws of the Koch Cancer Foundation provide that only physicians 'whose qualifications have met the approval of the Board of Trustees' and who have 'treated ten or more cases of cancer by the use of Koch's Synthetic Antitoxin' shall be eligible to become stockholders. The stockholders pay $100, for which one share of stock is issued. 'Membership' in the Foundation is to be limited to physicians who are 'able to furnish personal and business references satisfactory to the Board of Trustees.' Such individuals may become members on the payment of a membership fee of $10 and annual dues of $5. Dr. Koch states further that in addition to the funds that will come into the treasury of the Foundation from the sale of treatments, membership fees and annual dues, he expects to purchase 'upwards of $50,000 worth of stock.' It is stated further that the 'foundation' will from now on 'attend to sending out all publicity, pamphlets, literature and the like' and that it is sufficiently financed to carry on the work vigorously for some time to come."

The press agent of the Koch Cancer Foundation is V. E. Scott. Material is sent out from New York to newspapers in the country prepared in the form of news articles for "immediate release." Some of the newspapers are asked to print much of this in the form of news.

We should, perhaps, apologize for going into this matter so fully, but from the persistence of the issuance of the Bulletin of the Koch Cancer Foundation, which is sent regularly to many physicians, and from the general notices that are circulated among physicians and the public, it seems to be the duty of the regular medical profession to investigate and to present the facts. In these times when the American Society for Control of Cancer and other like agencies are emphasizing the importance of recognizing cancer in the early stages and of treating it as soon as possible in order to reduce its mortality, charlatans with their nostrums are only too willing to take advantage of this movement and exploit for their own selfish and financial gain treatments and remedies that not only do not cure cancer but may cause the victim of this dread disease to live in a fool's paradise and to delay what might have been curative treatment until all hope has gone. It is the same old thing over and over again, the medical profession being taunted with unwillingness to look into a new remedy and the unscrupulous charlatans and nostrum venders taking advantage of the psychology of the situation to grow rich at the expense of the health and the lives of their victims. Surely the facts as stated cannot be gainsaid, and there can be no fairer demonstration of the utter futility of the Koch cancer cure than the patient investigation of the three committees appointed from among the best men of the medical profession in Detroit.

J. Shelton Horsley.

News Notes

Christmas Greetings!

May your Christmas be bright,
And its joy and good cheer
Live on like the evergreen
All through the year!

The Southern Medical Association

Held its twentieth annual session in Atlanta, Ga., in November, under the presidency of Dr. C. C. Bass, of New Orleans. There was a registered attendance of nearly 3,000. The scientific program was up to its usual mark and the entertainments were elaborate. Alumni

reunion dinners, fraternity dinners, luncheon clubs, golf and trap shooting added greatly to the pleasure of those attending. Several auxiliary associations held meetings during this same time, thus adding to the interest. The scientific and commercial exhibits were excellent. The Committee on scientific awards, after making its awards, gave honorary mention to the exhibits of two individual members, one of these being Dr. J. S. Horsley, Jr., of Richmond.

Memphis, Tenn., was selected as the 1927 place of meeting, and the following officers were elected: President, Dr. J. Shelton Horsley, Richmond; first vice-prsident, Dr. Frank K. Boland, Atlanta, Ga., and second vice-president, Dr. A. A. Walker, Birmingham, Ala. Mr. C. P. Loranz, Birmingham, was re-elected secretary-manager for a term of five years. Dr. M. Y. Dabney, Birmingham, was last year re-elected editor of the Association's journal for a term of three years.

Married.

Dr. Joseph Thompson Graham, Draper, Va., recently on the staff of the McGuire Clinic, Richmond, and Miss Elsie Carlize Krengel, Richmond.

Dr. Richard J. Beck, neuropsychiatrist of the U. S. Veteran's Bureau, Richmond, and Dr. Regena Johnson, pathologist to Stuart Circle Hospital, Richmond, at Dr. Johnson's home in Bridgeport, Ohio, October 8th. They are now located at 2034 Park Avenue, Richmond.

Dr. Harry F. White, Fishersville, Va., and Miss Germaine Brutsche, recently.

Dr. Henry Leroy Townsend, of the class of '26, Medical College of Virginia, now an intern at Memorial Hospital, Richmond, and Miss Ellen Douglass Pippen, Littleton, N. C., December 1.

Dr. Samuel Bee Woodward and Mrs. Margaret Wood Wilson, of National Soldiers Home, Va., early in November.

Dr. Nat Hawkins Copenhaver and Miss Mary Amelia Slack, both of Bristol, Tenn., October 16.

Some Mortality Figures in Virginia.

The State Bureau of Vital Statistics states that while there has been a great decline in maternity deaths in Virginia in the last few years there are still far more deaths from this cause than should occur. In 1925 there were reported 417 puerperal deaths in this state, 215 white and 202 colored. The rate among the colored mothers was more than double that among the white, which is possibly explained by the fact that midwives are more generally employed by colored than by white patients.

The Bureau further reports 1,528 deaths from cancer in Virginia during 1925, 1,136 being white and 392 colored. The white death rate from this disease is 9.6 per 100,000 higher than the colored. The cancer death rate shows an increase for the past few years, not only in Virginia, but throughout the civilized world, while the disease is rare among primitive people.

Dr. David B. Lepper,

Formerly connected with health work in Virginia, is now health officer of Bluefield, West Virginia.

Loan Fund for Students.

Dr. Lazarus Karp, of Richmond, has established a loan fund at the Medical College of Virginia, Richmond, in memory of his brother, Dr. William Karp, an alumnus of that school, who died in 1918, while on duty at Camp Mead, Md. This is for students who have difficulty in meeting expenses of their medical education. They are expected to pay the interest of their loans to the college and pay the principal after they have left college and are financially able to take care of same.

Dr. H. O. Bell,

Formerly of Richmond, Va., announces his change of address from Essex County Hospital, Cedar Grove, New Jersey, to Essex County Isolation Hospital, Belleville, New Jersey.

Dr. Joseph M. Burke,

Of Norfolk, Va., chief surgeon of the Seaboard Air Line Railway, was presented with a silver loving cup by members of the Southern States' Association of Railway Surgeons at their annual meeting in Atlanta, Ga., last month.

Founders' Day Commemorated by Medical College of Virginia.

On December the 1st, the Medical College of Virginia celebrated its Founders' Day exercises in Monumental Episcopal Church, which is located in what was known as Academy Square. The speakers were Honorable Rosewell Page, second auditor of Virginia, Miss Adele Clark, who is identified with many public welfare movements, and Dr. Wyndham Blanton, member of the college faculty. The program was built around the history of the French Academy of Arts and Sciences, which was

founded in Academy Square, Richmond, in 1786, and had a short existence, as the first institution in America to offer graduate studies, and as a means of diffusing French culture in the new world. The history of the Medical College of Virginia is linked with that of the French Academy, because it was to this square that the Medical College of Virginia was moved in 1845 upon the erection of the building of Egyptian architecture, which is one of the six buildings now used by the College. Dr. W. T. Sanger, president of the College, presided over this meeting which was attended by upwards of 600 members of the board of trustees, faculty and students, wearing caps and gowns.

Dr. Andrew B. Byerly,

Of Cooleemee, N. C., was elected president of the Ninth District Medical Society of North Carolina, at a meeting held recently at Mocksville.

Decrease in Juvenile Delinquency Reported from England and Belgium.

Following close upon the Children's Bureau figures indicating that juvenile delinquency is decreasing in the United States, come reports from London and from Belgium showing a falling off in the number of juvenile offenders. According to the Commissioner of Police of London, the decrease has been continuous in recent years and is still going on. The number of persons dealt with in the juvenile courts of London for indictable offenses during 1925 was 1,151 as against 1,276 in 1924, and more than one-half of the cases were placed on probation.

The director of the Child Welfare Bureau at Brussels reports that juvenile delinquency in Belgium has decreased in the last twelve years. In 1913 the number of minors reported to the office of the public prosecutor was 17,177; in 1923 it was 13,523, and in 1924 it was 12,965. The decrease in the number of cases of vagabondage, habitual begging, stealing, and swindling was particularly noticeable. The report attributed this decrease to the higher wages and general improvement in economic conditions since 1913, and also to the laws providing for special court jurisdiction for minors, for probation, and for special educational measures for neglected, wayward, and delinquent children.

The National Tuberculosis Association,

Which met in Washington, D. C., in October, elected Dr. Henry Sewall, Denver, Col., president, and Dr. George M. Kober, Washington, D. C., secretary.

Dr. Clifton W. Henson,

Son of Dr. and Mrs. J. W. Henson, Richmond, of the class of 26, Medical College of Virginia, left recently for New York City, where he has entered upon his duties as intern at Gouverneur Hospital.

Dr. and Mrs. E. R. Martin,

Newport News, Va., have returned home after a visit to Palmyra, Va.

Dr. G. L. Morriss,

Buckingham, Va., has been appointed treasurer of Buckingham County, Va., to fill the vacancy until the next election of county officers.

The Annual Conference of Secretaries of Constituent State Medical Associations

Was held at the headquarters of the American Medical Association, in Chicago, November 19 and 20, with an excellent attendance of secretaries and editors of the State journals. Dr. W. G. Ricker, secretary of Vermont State Medical Society, presided. On the first day, addresses were made by Dr. Wendell C. Phillips, president, and Dr. Jabez N. Jackson, president-elect of the A. M. A., following which several papers were read which laid much emphasis on county and state organization work. On the second day, the conference was devoted to a discussion of Periodic Examinations of Apparently Healthy Persons.

Apart from the interest to be derived from "listening in" on a discussion of these subjects, it is an inspiration to inspect the A. M. A. plant, all departments of which are open to visitors.

Seaboard Medical Association of Virginia and North Carolina.

As we go to press, this Association is holding its thirty-first annual meeting at New Bern, N. C., under the presidency of Dr. George A. Caton, of that place. An interesting meeting had been planned.

North American Physicians Are Invited to Visit the Clinics of Europe Again in 1927.

In May next year a group of physicians with members of their families from the United States and Canada, under the direction of the Inter-State Post-Graduate Medical Association of North America, will sail from New York to visit the following leading medical centers of the old World: London, Edin-

burgh, Oslo, Stockholm, Upsala, Lund, Copenhagen, Hamburg, Leipzig, Munich, Strasbourg, Heidelberg, Frankfort and Paris.

This will be the third year that foreign assemblies have been conducted under the auspices of this organization. Those of 1925 and 1926 were exceedingly successful and of great benefit to the physicians who took advantage of them. No doubt the 1927 assemblies will meet with equal success.

In including Norway, Sweden and Denmark in the itinerary, the Association is offering the profession an exceptional opportunity to visit and study in some of the finest clinics in the world.

The group of physicians will be limited to a number that can be comfortably accommodated in the clinics which will cover the entire field of medical science.

The price of the trip will be kept as low as possible and yet furnish first-class accommodations. It will be between $1,000.00 and $1,100.00. All physicians who are in good standing in their State or Provincial Society may register. Further information may be obtained from the Managing-Director, Dr. William B. Peck, Freeport, Illinois, or the Travel Department of the American Express Company, 65 Broadway, New York, N. Y., who have charge of the transportation.

Special Courses for Physicians in Treatment of Venereal Disease.

Surgeon General Hugh S. Cumming has announced that the U. S. Public Health Service, as a part of its co-operative work with State health departments in the control of venereal diseases, will give special courses of training to physicians, clinicians, and health officers at its venereal disease clinic, Hot Springs, Arkansas.

This clinic, which is operated by the Public Health Service in a new building belonging to the Department of Interior, offers exceptional opportunities for the study of the venereal diseases, especially in clinical and laboratory diagnosis, treatment methods, and clinic management. Here, studies of the many practical and scientific problems connected with venereal disease control are carried on. Last year 3,570 indigent persons were examined at the clinic; 3,064 cases of syphilis and gonorrhea were diagnosed and given a total of 32,315 treatments.

Surgeon General Cumming states that the instruction courses which now are offered will consist of a series of lectures by the Director and the Consulting Specialists attached to the clinic, demonstrations in laboratory and treatment methods, and practical experience in the diagnosis and treatment of syphilis and gonorrhea in various stages through participation in the routine work of the clinic. New classes of not more than ten physicians will form on the first of each month and the course will continue for a minimum of thirty days. Engraved certificates will be presented by the Public Health Service to those who satisfactorily complete the thirty-day course.

Fees are not charged for this course of instruction. The individual physician, however, will necessarily provide his own travel expense to and from Hot Springs and his living expenses while there.

Interested physicians should write to the local State health officer or to the Surgeon General, U. S. Public Health Service, Washington, D. C., for information or application blanks. Applications should be indorsed by the State health department in which the applicant resides before being submitted to the U. S. Public Health Service.

Dr. L. H. Apperson

Has bought the home and taken over the practice of Dr. J. G. Carter, of 115 West 12th Street, Richmond. Dr. Carter is now in Philadelphia, where he is taking a special course in obstetrics for the purpose of specializing in that branch.

Dr. D. Hunter Marrow,

Of Union Level, Va., has gone to Florida to spend the winter at Daytona Beach, as has been his custom for several years.

Dreams Come True.

Paul Smith's had no little attention this past summer for people all over the country read of the daily doings of their President at the summer White House. Fifty years ago it was also known, but quite exclusively, as a hunting lodge where prominent business men went to shoot in the wilds of the Adirondack woods and forget their cares. The first person to make Paul Smith's and Lake Saranac famous as a winter resort was a young physician, ill with tuberculosis. Dr. Edward Livingston Trudeau, in 1875, with his wife and two little children, went up to the Adirondacks to die amongst his beloved pines and in the forest wilderness that was then Paul Smith's hunt-

ing lodge. In spite of the cold and hardships his health was benefited, though tuberculosis patients at that time were generally advised to seek warm sunny parts of the country and to remain indoors.

The following seven winters the Trudeaus lived in Saranac Lake village. The town then consisted of a small hotel for guides, a sawmill, a schoolhouse, a few guides' houses and a little store. And that was the beginning of the famous health resort. For in 1883 Trudeau started his cottage sanatorium at Saranac Lake in order that other tuberculosis patients might benefit as he had by the open air treatment. On the spot where he had dreamed his dreams of helping the tuberculous was built the well known "Little Red," as it was called, and two factory girls were his first patients in the humble one-room cottage with its tiny porch for "curing." Trudeau lived to be sixty-seven years of age and with the interest and help of others he made his dreams come true.

Now Trudeau Sanatorium at Saranac Lake is famed the world over. With the patients' cottages grouped about the Administrative building, the Training School for nurses, the Laboratory (the first to be devoted to tuberculosis research in this country, which Trudeau had started with his ridiculously home-made apparatus, in a little room that burned), the infirmary for bedridden patients, post-office, library, and workshop for occupational therapy, Trudeau Sanatorium today is well equipped to carry on our only known treatment and cure for tuberculosis.

There are now in this country 600 hospitals and sanatoria for the treatment of tuberculosis. Of this number there are 312 public institutions with 38,097 beds. Besides the public and private institutions there are semi-private and federal ones. In all we have 67,270 beds, not including 3,000 beds in institutions now under construction.

A country-wide campaign to control tuberculosis was started in 1904. At that time only five states were making any active effort to cope with tuberculosis. Now there are 1,550 state and local organizations working together and during these years since 1904 the death rate has been decreased from over 200 per 100,000 to 90.6 per 100,000. Organized effort, education, and sanatorium development have aided greatly in the decrease.

The dream of the workers in this big tuberculosis campaign is to control tuberculosis and stamp it out as one of the chief causes of death. They need everybody's help, especially in December during the Christmas seal sale, when funds are contributed to carry on their work in the communities in which the seals are sold. Everybody who contributes is joining the group of men and women whose dreams *must* come true.

Dr. Harry Goldstein,

Of the class of '26, Medical College of Virginia, left Richmond, last month for Clifton Forge, Va., where he will be connected with the C. & O. Hospital.

Dr. and Mrs. J. R. Shacklette,

And daughter, of Elkton, Va., recently visited friends in this city.

The South Piedmont Medical Society

Held its regular semi-annual meeting in South Boston, Va., November 16. Supper was served the visitors between the afternoon and evening sessions. Besides a symposium on "Diseases of Childhood," the program included a number of voluntary papers. Dr. E. Howe Miller, Danville, is president, and Dr. George A. Stover, South Boston, secretary.

The next meeting will be held in Lynchburg, on the third Tuesday in April.

Dr. Mosby G. Perrow,

Health officer of Lynchburg, Va., has been elected president of the Washington and Lee alumni chapter in that city.

Maternal and Infant Health Work.

Nearly 1,000,000 babies and pre-school children and approximately 180,000 expectant mothers were reached during the fiscal year 1926 by the National program for the betterment of maternal and infant health carried on by 43 States in co-operation with the Children's Bureau of the U. S. Department of Labor. This announcement by the Children's Bureau comes as a summary of the past year's work under the Maternity and Infancy Act, through which Federal aid is granted to the States for the purpose of improving the health of mothers and babies throughout the United States. The Act was passed in 1921 with provisions for appropriations for a five-year period.

Forty-three States and Hawaii have accepted the Act. Of the total 2,826 counties in these 43 States, 2,313 counties have been reached by the maternity and infancy program.

The Mecklenburg County Medical Society

Held a meeting November 8th, at Boydton, Va., which was well attended. This meeting was called with a view to getting the School Board to co-operate with the County Board of Health in putting into operation the use of toxin-antitoxin in the prevention of diphtheria. Drs. A. T. Finch, of Chase City, G. H. Carter, of Boydton, and H. M. Snead, of South Hill, reported that they had given this preventive to more than seven hundred children in the county. Dr. Grant, of the State Board of Health, gave an outline of the work that had been done in Brunswick County, Va., and stated that 4,320 children in that county had been given the toxin-antitoxin. After a free discussion of the subject, it was decided to petition the County Board of Supervisors to furnish the toxin-antitoxin, in which event the doctors of Mecklenburg County would hold clinics at the different schoolhouses in the county and give this preventive at fifty cents a dose. The school superintendent of the county was much interested in this movement and agreed to work with the doctors in trying to have all pre-school and school children immunized against diphtheria.

The Halifax County Medical Society

Held a called meeting at the time of the South Piedmont meeting, in November, and elected Dr. George A. Stover, South Boston, president to succeed the late Dr. H. S. Belt, and Dr. J. A. Owen, of Turbeville, secretary-treasurer. It was decided to make the county society more active and to have quarterly meetings.

Augusta County Medical Association.

At its last meeting, Dr. W. F. Hartman, R. F. D. 7, Staunton, Va., was elected secretary *vice* Dr. C. W. Putney who recently went to Philadelphia to take a post-graduate course. Dr. H. G. Middlekauff, Weyers Cave, is president.

Dr. F. Page Nelson,

Of Crozet, Va., in November had the misfortune to have his automobile totally destroyed by fire, caused by a short circuit in the rear light. He had just returned from a professional call and his satchel containing instruments was destroyed with the car.

Dr. B. C. Keister,

Washington, D. C., a member of the Medical Society of Virginia, left the latter part of November for Wisconsin, where he expects to spend several months visiting his daughter. On his way, he stopped in Chicago for several weeks to take up some special work on internal medicine and general surgery at the post-graduate schools there.

Dr. Bernard S. Steinberg,

Who was for a time connected with the house staff of Memorial Hospital, Richmond, but recently of Cleveland, Ohio, has been appointed director of research and laboratories at the Toledo Hospital, Toledo, Ohio, and will enter upon his new duties January 1st. Dr. Steinberg has recently been connected with the department of pathology of the Western Reserve University School of Medicine at Cleveland.

Dr. Robert Whitehead,

Richmond, was a recent visitor at his former home, Victoria, Va.

Dr. and Mrs. John A. Tipton

Have returned to their home at Keysville, Va., after a visit to relatives at Pulaski, Va.

That Yellow Slip

Is put in this issue of the journal for the benefit of those who have not paid 1927 assessment to the State Society. If you have attended to this, ignore the slip; if not, your return of the slip with remittance will help us both.

Dr. C. C. Coleman

Has returned to Richmond, after a professional visit to the southwestern part of the State.

Dr. M. H. Watson,

An alumnus of the University of Virginia School of Medicine, and recently of Chatham, Va., has moved to McRoberts, Kentucky, where he is doing contract practice in a coal mining town.

Dr. P. L. Hill,

An alumnus of the Medical College of Virginia, after several years as a medical missionary in Japan, has retired from the work, and sailed the last of November from Kobe, Japan, for this countrq. He expects to arrive in Virginia about Christmas time and his address, for the present, will be Glen Allen, Va.

Hygeia as a Holiday Gift.

Recently a letter was sent to a selected list of laymen announcing that the American Medi-

cal Association is now publishing *Hygeia*, and describing the features of the magazine. One of the letters came into the hands of a banker in Asheville, North Carolina. So impressed was he with the value of *Hygeia* to everyone that the bank of its own accord and at its own expense took large display space in two Asheville newspapers to reproduce portions of the letter, publicly endorse *Hygeia* and let citizens know that it could be obtained from the American Medical Association, 535 North Dearborn Street, Chicago.

This instance in itself might not have a great deal of significance, but it is typical of the way in which influential individuals, organizations and institutions have received and endorsed *Hygeia*. Without any general advertising, and with conservative efforts to promote circulation, *Hygeia* has become widely known among intelligent laymen and leaders in health work.

What does this mean to the medical profession? If anything, it signifies that the public is awakened and eager on matters of health, and that it looks to the medical profession for information. Thousands of physicians feel this responsibility and help to meet it by keeping a copy of *Hygeia* in their reception rooms.

Another excellent plan which finds favor with many physicians at the holiday season is to give gift subscriptions for *Hygeia* to patients or other friends. It is something that can be given with propriety and with the feeling that it will contribute to the welfare and happiness of the recipient. Special rates are now in effect. One subscription is $3.00; two $5.00; three or more are at the rate of $2.00 each.

Sectional Meeting of American College of Surgeons.

There will be a sectional meeting of the American College of Surgeons in Washington, D. C., on January 17 and 18, 1927. Fellows in attendance will be from the States of Virginia, West Virginia, Maryland and the District of Columbia.

Dr. James A. Shield Receives Honor.

Dr. James Asa Shield, who graduated from Medical College of Virginia last summer, has been selected as one of the four recent graduates from American medical colleges to serve an internship in the American Hospital at Paris. The period of internship is one year. Dr. Shield begins his service July 1, 1927, and expects to devote most of his time to the study of neurology and internal medicine, having for the past two years served as intern at Tucker Sanatorium, this city. He plans to continue this study in the clinics of Vienna, and other European cities after leaving Paris.

National Committee for Mental Hygiene.

At the seventeenth annual meeting of this association in New York City, recently, a paper presented by Dr. C. P. Emerson, of Indianapolis, Ind., emphasized the fact that it is possible for the individual to reach greater heights of mental, moral and emotional efficiency if he will only observe the rules of mental-hygiene. Dr. Frankwood E. Williams, medical director of the National Committee for Mental Hygiene, after reporting upon the society's work for the past year, stated that the Commonwealth Fund had decided to appropriate the sum of $490,000 next year for various mental-hygiene projects, and also announced a gift to the Committee from the Rockefeller Foundation of $40,000 for fellowships for the training of psychiatrists, psychologists and psychiatric social workers in community mental-hygiene technique and methods.

Dr. Charles P. Emerson, of Indianapolis, was re-elected president, and Mr. Clifford W. Beers, founder of the mental-hygiene movement, was re-elected secretary.

The U. S. Civil Service Commission,

Washington, D. C., announces open competitive examinations for junior medical officer (interne), applications to be on file at Washington, D. C., not later than December 30;

For dietitian, applications to be rated as received until December 30; and

For trained nurse and trained nurse (psychiatric), applications to be on file at Washington, D. C., not later than December 31.

Full information and application blanks for any of these may be obtained from the above Commission, at Washington, D. C., or the secretary of the board of U. S. civil service examiners at the post office or custom house in any city.

Dr. B. C. Henson,

Roda, Va., has returned home after a visit to relatives in Louisa, Va.

Scientific Exhibit at A. M. A. Meeting.

Arrangements are being made for the Scientific Exhibit of the American Medical Asso-

ciation in Washington, D. C., May 16-20, 1927. This exhibit will be located in the Washington Auditorium. In this building will also be housed the Registration Bureau, Technical Exhibits, and Motion Picture Theater.

The Committee makes certain requirements with regard to exhibits, which may be obtained by addressing "Scientific Exhibit," care American Medical Association, 535 North Dearborn Street, Chicago, Ill. The Committee will make no assignments previous to March 10th, in order that the amount of space available may be apportioned to the best advantage of all concerned.

Child Labor in Japan.

The International Labor Office, Geneva, has received information that the Emperor of Japan has approved the ratification by that country of the draft convention fixing the minimum age for the admission of children to industrial employment adopted by the first International Labor Conference in 1919. This convention fixed the general minimum age for industrial employment at 14, with special clauses for India and Japan fixing the age at 12. For Japan the clause stipulates that the children shall have finished the course in the elementary school before being admitted to employment and recommends that transitional regulations be made for children already in employment between the ages of 12 and 14.

Miss Rose Zimmern Van Vort,

Expert hospital executive and efficient business manager, available for position January 1st. Reorganization of hospitals and nursing schools a specialty. Address 3216 Monument Avenue, Richmond, Va. (Adv.)

For Sale—

$7,000 practice and office equipment in one of the best towns of Virginia. Fifteen hundred inhabitants, good surrounding country, all improved roads. Can use car entire year. Competition right, one other physician. Best offices in town. Part good contract practice. Considering moving to city if I can dispose of above to good man. Do not reply unless you mean business and want good field. Address "Doctor," care VIRGINIA MEDICAL MONTHLY. (Adv.)

Obituary

Dr. William P. McGuire,

An ex-president of the Medical Society of Virginia and for many years active in Society work, died at his home in Winchester, Va., November 15, after a short illness. He was a son of Dr. Hugh McGuire, also a leading physician of Northern Virginia, and was born in Winchester eighty years ago. Dr. McGuire served in Chew's Battery in the Confederate Army, having enlisted as a private in 1863 when just eighteen years of age. He studied medicine at the Medical College of Virginia, from which he graduated in 1867 and joined the Medical Society of Virginia in 1873. He was one of the best known and most beloved physicians in Northern Virginia, where he had practiced his profession for fifty-nine years. Dr. McGuire was at the time of his death president of the Farmers and Merchants National Bank of Winchester and was closely identified with many civic enterprises in his native town.

Shortly after entering upon the practice of medicine, Dr. McGuire married Miss Nannie Tucker, daughter of former U. S. Congressman, John Randolph Tucker. She died a number of years ago. He is survived by three daughters and one son, Dr. Hunter H. McGuire, of Winchester.

Dr. Edward Dabney Starke,

Of Norfolk, Va., died suddenly at his home in that city, on November the 21st, death being due to heart disease from which he had suffered for sometime. He had been about his duties as usual, that day, and died suddenly in the evening. Dr. Starke was born in Hanover County, Virginia, fifty-one years ago and studied medicine at the Medical College of Virginia, from which he graduated in 1903. He had been a member of the Medical Society of Virginia since 1906, and had resided in Norfolk since that time. His wife and two sons survive him.

At a called meeting of the Norfolk County Medical Society, on the 22nd day of November, 1926, the following resolutions were adopted:

The members of the Norfolk County Medical Society are deeply distressed at the death of our beloved and honored fellow member, Dr. Edward D. Starke.

Dr. Starke, by his kindly disposition and willingness to serve, was endeared to us all. We will miss him.

Be it resolved, That a page be set aside in the minute book of this Society, dedicated to his memory;

That a copy of these resolutions be sent to his family with our sympathy.

F. C RINKER, *Chairman,*
CHAS. W. DOUGHTIE,
JAMES B. ABBITT,
Committee.

Dr. Isaac Webb Surratt,

Of Belspring, Va., died at his home in that place, October 20, having been ill only a short time. He was fifty-three years of age and had studied medicine at the Medical College of Virginia, from which he graduated in 1908, shortly thereafter becoming a member of the Medical Society of Virginia. He was secretary of the Pulaski County Board of Health.

Philip Turner Southall, M. D.

Born Amelia County, May 18, 1851, died Amelia Court House, February 17, 1926. Attended the University of Virginia and graduated from the Medical College of Virginia in 1873.

Then, as now, Amelia was abundantly supplied with physicians, and in those days before the emancipation of women, young unmarried medical men had no chance whatever in competition with older men who were married. A physician's skill was considered largely a matter of experience, and if unmarried he was "taboo." So Dr. Southall, for fifteen years, led the life of a young Virginia gentleman of the anti-Civil War period. He shot deer and "rode to hounds" or fox hunted. He was considered one of the most graceful and daring riders in a country where and at a time when everybody rode horseback. Though his vision was poor (myopia), he was quite successful in deer shooting.

At the death of Dr. Boisseau, in 1889, Dr. Southall removed to Amelia C. H., and at once entered active practice. He was without doubt the most skilled obstetrician I have ever seen operate. With forceps or version, he was supreme, and I know of more than one fine character now living who would never have seen the light of day but for his almost miraculous ability. Cesarean section was then seldom done. I have known Dr. Southall more than once to deliver an infant alive and unimpaired, on whom assembled physicians were about to do an embryotomy.

He was also an excellent business man. Together with his brother, the Hon. R. G. Southall and the late Mr. J. J. Allen, he practically made the little town of Amelia. He owned at one time the very heart of what is now the town. He was always for progress. Unlike the other property holders he would, and did, sell lots, thus building up the town. Unaided—even resisted—he had by 1910 built the Amelia High School. Dr. Southall was at that time head of the Amelia School Board. He was Chief Health Officer of Amelia for years, and was a charter member of the Medical Society of Amelia and its president from its organization to the day of his death. He was a member of the Medical Society of Virginia and a Fellow of the American Medical Association. He was vice-president of the Southside Highway Association and was largely instrumental in the construction of modern roads in Amelia County. He was a member and elected treasurer of the Society of the Cincinnati. He was for seven years assistant superintendent of the Eastern State Hospital at Williamsburg and was beloved and admired by patients and nurses alike. He was vestryman of Old Bruton Church while at Williamsburg and later served in the same capacity in Christ Church, Amelia.

He died as he had lived—*without fear.*

G. Craig Eggleston, M. D.,
President, Medical Society of Amelia.

Resolutions on Death of John W. Brodnax, M. D.

In the death of Dr. John W. Brodnax, the medical profession has lost a valuable teacher and the community and State a distinguished and useful citizen. As a teacher of anatomy, his love for the work and his knowledge of art, combined with his untiring energy, easily made him a master in that field. As an artist, he was able to make many valuable contributions to the science of anatomy, some of his drawings winning for him international recognition; but the love and esteem of his students and ever-widening circle of friends meant infinitely more to him than the fame which his scientific achievements brought him. His modest, gentle, unassuming manner obliterated all barriers between teacher and student, and the humblest student always looked upon him as a true friend and companion.

As a practitioner of medicine, he was a skillful, conscientious and sympathetic physician. Prior to his work as full-time associate professor of anatomy at the Medical College of Virginia, he enjoyed the esteem and confidence of a large clientele, ministering to its needs at all times in a skillful, unselfish manner; and, so,

Whereas, It has pleased an All-wise Providence to remove from our midst our distinguished friend and co-worker, therefore; be it resolved by the Richmond Academy of Medicine

That we deeply deplore the loss of his wise counsel and loyal fellowship;

That we extend our sympathy to his bereaved family in this dark hour of their sorrow; and be it further resolved,

That a copy of this preamble and these resolutions be sent to his family; that they be spread upon the minutes of this society, and that they be printed in the Virginia Medical Monthly as a public mark of esteem and affection.

The above draft was adopted unanimously at a meeting of the Richmond Academy of Medicine, held on November 9, 1926.

Mark W. Peyser,
Secretary-Treasurer.

Dr. Isaac Milton Brumback,

Of Opequon, Va., died October 3rd, at the age of eighty years. He was a graduate in medicine from the Medical College of Virginia in the class of 1872. When in his teens, he entered the Confederate service in the War between the States and later studied medicine, graduating from the Medical College of Virginia in the class of 1872. He is survived by his widow and four children.

Dr. Luther S. Mason

Died at his home at Clover, Va., October 14th, after an illness extending over several years. He was a native of Charlotte County, Va., and was seventy-three years of age. His medical education was had at the College of Physicians and Surgeons, Baltimore, from which he graduated in 1874. Dr. Mason's wife died some years ago and he had no children. His funeral was conducted by the local Masonic lodge of which he was a member.

STOVARSOL

(REG. IN U. S. PATENT OFFICE)

Acetylamino-oxyphenylarsonic Acid

Indicated in Amebic Dysentery

Accepted by Council of Pharmacy and Chemistry A. M. A.

Distributed in bottles of 25 tablets, each tablet 0.25 grams
May be obtained through your druggist

Literature furnished on request

MANUFACTURED BY

POWERS-WEIGHTMAN-ROSENGARTEN CO.

New York PHILADELPHIA St. Louis

Hotel Richmond

300 Rooms, Fireproof,
Overlooking Capitol Park

In Center of Business and Amusements

HOTEL RICHMOND REALTY CORP.
Owners

W. E. Hockett, Manager

THIS SPACE RESERVED FOR

MURPHY'S HOTEL

8TH AND BROAD STREETS
RICHMOND, VA.

The Largest and Most Distinctive Hotel in Virginia

RATES REASONABLE
SERVICE UNEXCELLED

JAS. T. DISNEY President and Manager

Capital $1,000,000 Surplus Earned $1,500,000

ESTABLISHED 1892

To act as Executor, Guardian and Trustee

$30,000,000

of investments held in Trust

Confidential Interviews Invited.

The Quiet Running LIGHT *Running Royal Typewriter*

"COMPARE THE WORK"

Royal Typewriters For Rent -:- Students, Special Rate

ROYAL TYPEWRITER COMPANY

737 E. Main St. ---- Richmond, Va.

The Personal Element

Largely Determines the Value of Your Relationship With Your Bank

The Central National Bank always adapts its service to the personal preferences as well as to the individual requirements of its patrons.

TRY IT DOCTOR

THE CENTRAL NATIONAL BANK

Third and Broad

RICHMOND, VIRGINIA

Resources $11,000,000.00

Virginia Medical Monthly

OFFICIAL ORGAN OF THE MEDICAL SOCIETY OF VIRGINIA

Vol. 53, No. 10.
WHOLE No. 895.

RICHMOND, VA., JANUARY, 1927

$2.00 A YEAR
20 CENTS A COPY

JAN 21 1927

CONTENTS.

Last Illness and Death of Washington. Walter A. Wells, A. M., M. D., F. A. C. S., Washington, D. C. ---------- 629
The Debatable Fields of Public Health Activity. E. G. Williams, M. D., Richmond, Va. ---------- 642
The Medical Profession of Virginia and State Medicine. J. Shelton Horsley, M. D., Richmond, Va. ---------- 647
The Roentgen Ray Treatment of Subacute Infections. Vincent W. Archer, B. S., M. D., University, Va. ---------- 649
The Normal Kidney. Wilbur M. Bowman, M. D., Petersburg, Va. ---------- 651
The Diagnosis of the Various Forms of Nephritis. L. S. Early, M. D., Petersburg, Va. ---------- 655
Points About Roentgen Examinations of the Urinary Tract That Interest the Referring Physician. Wright Clarkson, M. D., Petersburg, Va. ---------- 657
Treatment of Nephritis. William C. Powell, M. D., Petersburg, Va. ---------- 660
The Treatment of Whooping Cough With Intramuscular Injections of Ether. Samuel Newman, M. D., Danville, Va. ---------- 662
On the Percussion of the Heart. James W. Hunter, Jr., M. A., M. D., Norfolk, Va. ---------- 665
The Influence of Circulatory Disturbances on Post-Operative Mortality. Wm. H. Higgins, M. D., Richmond, Va. 670
Peritonitis as Related to Appendicitis. J. E. Rawls, A. B., M. D., F. A. C. S., Suffolk, Va. ---------- 675
Nephritis in General. R. M. LeComte, M. D., A. C. S., Washington, D. C. ---------- 676
Some Clinical Considerations of Hematuria—With Lantern Slides. W. Calhoun Stirling, M. D., F. A. C. S., Washington, D. C. ---------- 678
The Sinus Problem. G. B. Trible, M. D., Washington, D. C. ---------- 682
MISCELLANEOUS ---------- 685
WOMAN'S AUXILIARY MEDICAL SOCIETY OF VIRGINIA ---------- 687
PROCEEDINGS OF SOCIETIES ---------- 688
THE TRUTH ABOUT MEDICINE ---------- 689
EDITORIAL ---------- 691
NEWS NOTES ---------- 694
OBITUARY ---------- 700

INDEX OF ADVERTISERS—Advertising Page 5.

Calcreose

FOR BRONCHITIS AND TUBERCULOSIS

At this season when coughs and colds are prevalent it is well to guard against their more serious consequences.
In Calcreose you have a remedy that furnishes the full stimulant expectorant action of creosote without the disturbing effect of plain creosote.
Calcreose represents about 50% creosote in tablet form. It is easily administered and is particularly suitable as an adjunct to other remedial measures.

POWDER ::: TABLETS ::: SOLUTION

Samples of Tablets on Request

THE MALTBIE CHEMICAL COMPANY

NEWARK, N. J. : *Manufacturers of Pharmaceutical Products*

Complete Catalogue on Request

INFANT DIET MEAD'S MATERIALS

Cow's Milk, Water and MEAD'S DEXTRI-MALTOSE

has been successfully used for years in the feeding of infants deprived of their natural food.

It is the carbohydrate of choice because it can be assimilated by the infant in greater amounts than other sugars.

It requires the least amount of energy on the part of the infant to assimilate it.

It is less likely to cause diarrhea than other forms of carbohydrate.

It produces a quicker gain in weight than any other form of carbohydrate.

Where certified milk or milk of equal quality cannot be obtained, MEAD'S POWDERED WHOLE MILK reliquefied by the addition of 4 level tablespoonfuls or one ounce of the dry powder to 7 ounces of sterile water may be substituted for the liquid milk called for in the formula.

The Mead Johnson Policy

MEAD'S Infant Diet Materials are advertised only to physicians. No feeding directions accompany trade packages. Information in regard to feeding is supplied to the mother by written instructions from her doctor, who changes the feedings from time to time to meet the nutritional requirements of the growing infant. Literature furnished only to physicians.

MEAD JOHNSON & COMPANY

EVANSVILLE, INDIANA, U.S.A.

Manufacturers of Infant Diet Materials Exclusively

Virginia Medical Monthly

Official Organ of the Medical Society of Virginia

Vol. 53, No. 10.
WHOLE No. 895.

RICHMOND, VA., JANUARY, 1927

20 CENTS A COPY
$2.00 A YEAR

LAST ILLNESS AND DEATH OF WASHINGTON.*

By WALTER A. WELLS, A. M., M. D., F. A. C. S.,
Washington, D. C.

Of Washington's manner of life there was never until the most recent time but one opinion. His manner of death, however, became immediately after its occurrence the subject of a controversy, which has never been satisfactorily settled in all the hundred and twenty-five years which have since elapsed.

The announcement of his death came as a stunning blow to the country, unprepared by any knowledge of a recent illness. Universally reckoned as a man of tremendons physical vigor, it seemed all the more strange to learn that he died of a simple cold of only forty-eight hours' duration.

The cause and nature of his illness were called into question, and the medical management of the case came in for severe criticism which was aimed only at the physicians in attendance. There have since been added innuendoes inspired by an iconoclasm rampant in certain quarters in the present age, which are intended to reflect upon the character of the great man himself. Fortunately we have the records; for the death as well as the life of Washington have been chronicled with singular exactness to even the minutest details. And if we review these records in the light of now advanced state of medical science, we should in the first place obtain a verification as to their consistency with fact, and, in the second place, arrive at a correct opinion as to the nature of the illness and of the method of treatment.

Besides the published statement of his physicians, there is the circumstantial account of the last days of Washington by his devoted secretary, Col. Tobias Lear. This, written under date of December fourteenth, might be viewed in a sense as a continuation of Washington's own diary; for, as we know, throughout the greater part of his life he wrote down with scrupulous exactness the commonplace occurrences of his daily life, and there is an entry as late as December the thirteenth, probably the last words he penned, being the very day before the day of his death.

It will be interesting and at the same time apropos to preface the account of the illness given by Lear, with a transcription of the last entries in Washington's diary:

December 1—Mr. Foot dined here.

December 2—Lord Fairfax, Lady, Daughter and Miss Dennison dined here.

December 3—Mrs. Stuart and Daughter went away after breakfast.

December 4—Morning clear, wind at northwest and mercury at 36. From ten o'clock until two, very little snow; it then cleared and became very mild and pleasant, mercury at 38; wind at north.

December 5—Morning raining and continued to do so moderately through the day with wind southeast; mercury 38 in the morning, and 36 at night.

December 7—Rainy morning with wind at northeast, mercury at 37; afternoon clear and pleasant, wind westerly, mercury 48 at night. Dined at Lord Fairfax's.

December 9—Morning clear and calm; mercury 31, afternoon lowering, mercury at 32 and brisk wind from the southwest. A very large hoar frost this morning.

December 11—But little wind and raining, mercury 44 in the morning; 38 in the night; about nine o'clock the wind shifted to northwest and it ceased raining but it continued cloudy. Lord Fairfax, his son Thomas, and Daughter, Mrs. Warner Washington and son Whiting and Mr. John Herbert dined here and returned after dinner.

December 12—Morning cloudy, wind at northeast and mercury at 33. A large circle around the moon last night. About ten o'clock it began to snow, soon after hail and then a settled rain. Mercury at 28 at night.

December 13—Morning snowing and about three inches deep, wind at northeast and mercury at 30. Continued snowing until about one o'clock, and about four o'clock it became perfectly clear. Wind at same place not hard. Mercury 28 at night.

Now, according to Colonel Lear, Washing-

*Read by invitation at the fifty-seventh annual meeting of the Medical Society of Virginia, in Norfolk, October 12-15, 1926.

ton on December 12th was riding about his farm from ten to three o'clock and the weather at this time was bad, "Rain, hail and snow falling alternately with a cold wind."

Dr. James Craik.

He observed with regard to the General on his return "that his neck appeared wet and that snow was hanging upon his hair" and that he came to dinner without changing his dress.

The next day, Friday, the General did not go out as usual, in the forenoon, for he had taken cold and complained of a severe sore throat. He went out, however, in the afternoon to mark some trees which had to be cut down. He had now a "hoarseness which increased in the evening, but he made light of it. He spent the evening reading the papers, and when he met anything interesting, he read it as loud as his hoarseness would permit." On retiring, Colonel Lear suggests that the General take something for his cold, but he answered, "No, you know I never take anything for a cold. Let it go as it came."

On the next day, which was Saturday, at three o'clock in the morning, he told Mrs. Washington that he was very unwell and that he had an ague. It was observed that he could scarcely speak and that he breathed with difficulty. At daybreak, Mr. Lear came in and found the General breathing with difficulty and hardly able to utter a word intelligently.

"A mixture of molasses, vinegar and butter was given, but he could not swallow a drop, and when he attempted, he appeared to be distressed, convulsive and almost suffocated."

Rawlins, the overseer, was sent for at Washington's request to bleed him, and one pint of blood was taken with no relief. Lear next applied sal volatile to his throat gently with his hand, upon which the patient remarked that the throat was very sore. A piece of flannel dipped in sol volatile was put around his neck and the feet bathed in warm water, all without relief. About eight o'clock, he got up for about two hours, but obtained no relief from the changed position. Doctor Craik arrived shortly after nine o'clock. He applied a blister of cantharides to the throat, took some more blood and prescribed a gargle of vinegar and sage tea. He also ordered vinegar and hot water for steam inhalation. In attempting to use the gargle the patient almost suffocated, and when the gargle came back from the throat some phlegm followed.

At eleven o'clock the bleeding was repeated, but the difficulty in swallowing did not improve. In the meantime, Doctor Gustavus Richard Brown, of Port Tobacco, and Doctor Elisha Dick, of Alexandria, had been summoned. Doctor Dick arrived about three o'clock, and Doctor Brown shortly after. The patient was again bled and it was noted that the blood came "slow and thick," but there was no fainting. Calomel and tartar were administered wihout effect. About half past four o'clock Washington gave directions about his will, and at about five he again tried sitting up but remained so only half an hour. In the course of the afternoon, he appeared to be in great pain and distress from the difficulty in breathing, and frequently changed his position in bed.

About eight o'clock, the physicians applied blister and cataplasms of wheat bran to his legs and feet. The condition remained unchanged until about ten minutes before his decease, when the breathing became easier. He died between ten and eleven.

The following statement by his physicians, Doctors Craik and Dick, published in "*The Times*," of Alexandria, December 19, 1799, was reprinted in the Medical Repository at their request:

"Messrs. J. and D. Westcott,

"Presuming that some account of the late illness and death of General Washington will be generally interesting, and particularly so to the professors and practitioners of medicine throughout America, we request you to publish the following statement.

JAMES CRAIK, ELISHA C. DICK.

"Some time in the night of Friday, the 13th inst., having been exposed to rain on the preceding day, General Washington was attacked with an inflammatory affection of the upper part of the windpipe, called in technical language, cynanche trachealis. The disease commenced with a violent ague, accompanied with some pain in the upper and fore part of the throat, a sense of stricture in the same part, a cough, and a difficult rather than painful deglutition, which were soon succeeded by fever and a quick and laborious respiration. The necessity of blood-letting suggesting itself to the General, he procured a bleeder in the neighborhood, who took from the arm in the night, twelve or fourteen ounces of blood; he would not by any means be prevailed upon by the family to send for the attending physician till the following morning, who arrived at Mount Vernon at eleven o'clock on Saturday morning. Discovering the case to be highly alarming, and foreseeing the fatal tendency of the disease, two consulting physicians were immediately sent for, who arrived, one at half past three and the other at four in the afternoon. In the interim were employed two copious bleedings; a blister was applied to the part affected, two moderate doses of calomel were given, an injection was administered which operated on the lower intestines, but all without any perceptible advantage, the respiration becoming still more difficult and distressing. Upon the arrival of the first of the consulting physicians, it was agreed, as there were yet no signs of accumulation in the bronchial vessels of the lungs, to try the result of another bleeding, when about thirty-two ounces were drawn, without the smallest apparent alleviation of the disease. Vapours of vinegar and water were frequently inhaled, ten grains of calomel were given, succeeded by repeated doses of emetic tartar, amounting in all to five or six grains, with no other effect than a copious discharge from the bowels. The powers of life seemed now manifestly yielding to the force of the disorder. Blisters were applied to the extremities, together with a cataplasm of bran and vinegar to the throat. Speaking, which was painful from the beginning, now became almost impracticable, respiration grew more and more contracted and imperfect, till half after eleven o'clock on Saturday night, when, retaining the full possession of his intellect, he expired without a struggle.

"He was fully impressed at the beginning of his complaint as well as through every succeeding stage of it, that its conclusion would be fatal, submitting to the several exertions made for his recovery, rather as a duty than from any expectation of their efficacy. He considered the operation of death upon his system as coeval with the disease; and several hours before his decease, after repeated efforts to be understood, succeeded in expressing a desire that he might be permitted to die without interruption.

"During the short period of his illness he economized his time in the arrangement of such few concerns as required his attention, with the utmost serenity, and anticipated his approaching dissolution with every demonstration of that equanimity for which his whole life had been so uniformly and singularly conspicuous.

JAMES CRAIK. *Attending Physician.* ELISHA C. DICK, *Consulting Physician.*

"The signature of Doctor Gustavus Brown, of Port Tobacco, who attended as consulting physician, on account of the remoteness of his residence from the place, has not been procured to the foregoing."

This statement, we may say, agrees perfectly with the account given by Mr. Lear, except in some non-essential particulars. Before proceeding to discuss the case, let us, after the correct manner of writing clinical histories, now add what we find out as to the patient's family health history, and of his own previous illnesses, his habits of living and his physical characteristics, all of which are important in arriving at a correct diagnosis and prognosis in this case, as well as in all others.

Family Health History. On his father's side, the Washington's were short lived. The great grandfather, Colonel Washington, died at the age of 54; the grandfather Lawrence died at the age of 37, and the father Augustine, at the age of 49.

By a remarkable coincidence, the last illness of Washington's father appears to have been very similar to his own. He is known to have contracted a cold after an exposure in a storm and to have died after a brief illness. Of the immediate family of the patient, we find that, of those who had the same father but a different mother, Butler died in youth, Lawrence age 34, Augustine age 40, and Jane age 13. Of those who had the same mother as well as father, Bettie died at 64, Samuel at 47, John Augustine at 51, Charles at 61, and Mildred in infancy. Washington's oldest half brother, Lawrence, from whom he inherited Mount Vernon, is thought to have had tuberculosis. Washington made a trip with him when he went to Barbadoes in search of health.

On his mother's side we have not such definite information, but his mother, we know, lived to the good old age of 82, dying just one year before the death of the General.

Physical Characteristics and Habits. Describing his impressions, a writer in the *London Chronicle* wrote, "Washington is now 47 years of age. He is a tall, well made, rather large boned man, and has a genteel address. His features are manly and bold, his eyes of a bluish cast and very lively, his hair a deep brown, his face rather long and marked with smallpox; his complexion sunburnt and without much color; his countenance sensible, composed and thoughtful." George Washington Park Curtis wrote "General Wash-

ington's powers were mostly in his limbs. They were long, large and sinewy. His frame was of equal breadth from shoulder to hips. His chest though broad and expansive was not prominent, but rather hollowed in the center. He had suffered from a pulmonary affection in early life, from which he never entirely recovered. His frame showed an extraordinary development of bone and muscle; his joints were large, and could a cast have been preserved of his hands in these degenerate days, it would be said to have belonged to a being of a fabulous age."

We cannot omit description of Dr. James Thacher, an eminent physician of his day. Writing in 1778, he depicted him as "remarkably tall, full six feet, erect and well proportioned. The strength and proportion of his joints and muscles appeared to be commensurate with the pre-eminent powers of his mind." And he goes on to say, "the severity of his countenance and majestic gracefulness of his deportment impart a strong impression of that dignity and grandeur, which are his peculiar characteristics, and no one can stand in his presence without feeling the ascendency of his mind and associating with his countenance the idea of wisdom, philanthropy, magnanimity and patriotism. There is a fine symmetry in the features of his face, indicative of a benign and dignified spirit. His nose is straight and his eye inclined to be blue. He wears his hair in a becoming cue and from the forehead it is turned back and powdered in a manner which adds to the military air of his appearance. He displays a native gravity, but devoid of all appearance of ostentation."

Dr. Ewell Cullen Dick.

By actual measurement by Mr. Lear, after death, the body was found to be in length 6 ft. 3½ ins.; across shoulders 1 ft. 9 ins.; across elbows 21 inches.

Whatever may have been Washington's inheritance, it is certain—by assiduous self-discipline, which he practised in physical as well as in mental matters—he constantly trained and increased his strength, his agility and powers of endurance. In boyhood games of wrestling, running, throwing, pitching quoits and the like, he is said to have excelled all his companions. One of the most frequently repeated anecdotes refers to his throwing a stone across the Rappahannock River, an incredible distance.

Throughout his whole life, constantly in the saddle in early life fox hunting, and later, in his campaigns,—he is generally said to have exhibited an expertness in horsemanship rarely excelled.

With regard to his habits, Irving writes, "He was an early riser, often before daybreak in the winters when the nights were long. On such occasions, he lit his own fire and wrote and read by candle light. He breakfasted at seven in summer and eight in winter.

Two small cups of tea, and three or four cakes of Indian meal, (called hoe cakes) formed his frugal repast. Immediately after breakfast he mounted his horse and visited those parts of his estate where any work was going on, seeing to everything with his own eyes and often aiding with his own hands. Dinner was served at two o'clock; he ate heartily but was no epicure and was not critical about his food. His beverage was small beer or cider, or two glasses of old madeira. He took tea of which he was very fond early in the evening and retired for the night about eight o'clock."

Previous Illnesses. What, if any illnesses Washington suffered in childhood is not known. It is surmised that he had measles, simply because he was much with Mrs. Wash-

ington, who had an attack early in their married life, and he did not contract it.

The earliest illness of which we have any record is an attack of smallpox at the age of 19, contracted during his visit with his brother Lawrence at Barbadoes. He was, he says, "strongly attacked." He was ill about three weeks and his face was left slightly marked. Shortly after he returned he had what was called "a violent attack of pleurisy which reduced me very low." During the Braddock campaign, Washington, then thirty years of age, was stricken with a fever, accompanied by an intense attack as a result of which he was unable to continue the march. The nature of the trouble is unknown, but was apparently contagious as his servant developed the same kind of illness. Washington's indisposition continued without abatement from June 19 to 23, when he says "I was relieved by the General's ordering a physician to give me Dr. James' powder,* one of the most excellent medicines in the world. It gave me immediate relief and removed my fever and complaints in four days."

Two years later, while on the frontier, Washington was seized with an attack of dysentery with fever, which compelled him to leave the army and return to Mount Vernon. A few months later, this disorder was still returning at times obstinately upon him, he complains, "in spite of all efforts of the sons of Aesculapius." "At certain periods" he goes on to say, "I have been reduced to great extremity and have much reason to apprehend an approaching decay being visited with several symptoms of such a disease."

It was at this time, when on his way to Williamsburg to consult the best physicians there, that he met the widow, Martha Ball. The medical treatment was evidently successful, for despite the pessimistic foreboding to which he had just given utterance, within one month he was engaged, and within one year happily married.

In 1761, Washington was ill again with a fever of some kind, probably malarial, on account of which he made a visit to Warm Springs. He suffered considerably with pain and a disturbed sleep. A relapse occurring, he again became quite despondent. He writes "I was very near my last gasp. The indisposition increased upon me and I fell into a very low and dangerous state. I once thought the grim King would overcome my best efforts and that I must sink in spite of a noble strength."

In his diary, we have an account of the recurrence of the dysenteric ailment in 1768:

March 2—Hunting; again catched a fox with a bobbed tail and cut ears, after several hours' chase in which most of the dogs were worsted.

March 3—Returned home much disordered by griping and violent straining.

March 4—At home with above complaint; sent for Dr. Rummey, who came in the afternoon.

March 5—Very bad, the Doctor staying with me.

March 6—Something better. Doctor staying with me and Mr. Ramsey stayed to dinner.

After confinement at home of about a week, his recovery was indicated by entry under date of March 14: "Hunting with Captain Posey and Lund Washington; started and catched a fox in about three hours."

While in his retirement at Mount Vernon, at the close of the war, we learn from his diary that in September, 1786, he had suffered from attacks of ague and fever, the malarial character of which is quite evident from the fact of their periodicity and from their treatment and relief by the bark prescribed by Doctor Craik.

Entry of September 2, says "Kept close to the house all day, being my fit day in course, at least any exposure might bring it on. Happily missed it."

Shortly after assuming his office as President, Washington was laid up with a severe attack of what was called anthrax, but which was evidently carbuncle, located upon the left hip. It proved to be a very virulent process, causing such prostration of his strength that the country was at the time greatly alarmed for fear of a fatal outcome. The malady caused him great pain and discomfort and confined him to the house nearly six weeks. When later he was able to go out, his coach had to be especially constructed to allow him to lie at full length. He was then under the medical care of Doctor Samuel Bard, one of the most eminent practitioners of New York.

Washington, when on a vist to Boston, was delayed a considerable time on the outskirts in rain and stormy weather because the city and state authorities were unable to settle a

*Note:—James' powder was a mixture of a antimonious oxide and calcium phosphates. It was diaphoretic in action and used frequently for inflammatory ailments of the respiratory organs.

stupid dispute as to the etiquette of receiving the president. The result was that he developed a troublesome cold which caused some inflammation of the eyes. It seems that just following this visit an epidemic of colds developed in the city, which were, from the incident, commonly referred to as the "Washington influenza."

In 1790, the Federal Government was removed from New York to Philadelphia. In the spring of this year, Washington was taken with another illness which almost proved fatal, in the nature of inflammation of the lungs, probably pneumonia.

The close application to public business, and the incessant demands upon him incident to the office, proved no doubt to be a very great strain. He wrote, "I have already within less than a year had two severe attacks, the last worse than the first. A third, more than probably, will put me to sleep with my fathers. At what distance this will be, I know not.

"I am thankful that I am so well recovered, though I still feel the remains of the violent affection of the lungs, the cough, the pain in my breast, shortness of breath, not having entirely left me."

When Congress adjourned, August 12, 1790, Washington set out on a voyage to Newport, R. I., with the hope of having his health benefited by a sojourn in this already famous health resort. In a letter written by Jefferson to Madison June 9, 1793, he says, "The President is not well; little lingering fevers have been hanging about him for a week or ten days and affecting his look most remarkably."

The last year or so of his life his health was certainly much impaired. He writes under date of August 20, "No account of weather, etc., kept from hence to the end on account of a sickness commenced with a fever on the 19th and lasted until the 24th, which left me debilitated."

The same year he wrote to a correspondent explaining his failure to write on account of "debilitated health occasioned by the fever, which deprived me of 20 lbs. of weight, I had when you and I were at Troy Mill Scales, rendering writing irksome."

In addition to the illnesses enumerated, Washington suffered certain infirmities of a minor kind. His teeth early in life (1754) gave him trouble and his expense accounts show frequent visits to the dentist, losing from year to year one tooth after another until finally all were gone and had to be replaced by a plate. He began to use glasses at the age of 46; in 1783 he remarked that he had grown almost blind as well as gray in the services of his country. His hearing in later years of life at least was noticeably impaired. Maclay remarked this in 1793, and said he believed the President heard only a small part of the conversation in which he engaged. Washington, himself, writing to Jefferson in 1796, said that he was sensible of a decay in hearing and that perhaps his other faculties might be falling off.

The above account of his last and former illnesses gathered from various reliable sources comprise such exact and detailed clinical data,

Dr. Gustavus Brown (Father of Dr. Gustavus Richard Brown).

that it may be said to constitute a fairly complete anamnesis, on the basis of which, even at this late day, we feel justified in reopening the case in order to consider the diagnosis and treatment in the light of accumulated experience and the more advanced state of medical knowledge of the present period.

Summarizing, we find that Washington came of short lived paternal ancestors in whom there was a marked tendency toward affections of the respiratory tracts; that, by a life in the open, with constant exercise of his physical energies and regular and temperate habits, he

developed a marvelous constitution, which was indeed put to severe test by the hardships of his military campaigns and the exactions of his political life, not showing decided signs of breaking until the last one or two years of his life.

He had a number of illnesses, the nature of all of which is not definitely known, though the following seems well established, viz., smallpox, dysentery, malaria, pneumonia. In addition, he had much trouble on account of carious teeth. His illnesses were several times of such severity that his life was almost despaired of, and he seemed at these times to have taken a most pessimistic view of the outcome. With regard to his last illness, it was clearly due to taking cold from exposure to very inclement weather, accentuated by failure to change his clothes which had become wet from rain and snow. Within twelve hours he had developed symptoms of an acute inflammatory condition of the throat, indicated by difficulty in speaking, swallowing and breathing. His chief symptoms in the order of their occurrence were sore throat, hoarseness, cough, chill, difficulty of breathing, difficulty in swallowing, expectoration, fever, loss of voice and suffocation.

There is no mention that the interior of the throat was examined at any time, and we believe that it was not done; otherwise, it would certainly have been mentioned by Lear, or by his physicians. Chest examination was negative.

Outside of simple catarrhal inflammation of the mucous membranes, the acute inflammatory affections of the throat are of three kinds:

1. Those attended with formation pus, as quinsy.

2. Those attended with the formation of a pseudomembrane, as diphtheria.

3. Those characterized by watery infiltration, as inflammatory edema.

We will consider briefly the individual affections suggested by the symptoms in Washington's case:

1. *Acute Laryngitis.*—This affection, designated in the text-books as acute catarrhal laryngitis, is due to simple inflammation of the mucous membrane of the larynx, and occurs as the result of taking cold. It is marked by hoarseness, and there may be complete loss of voice; there is usually sore throat, slight fever and some cough, but ordinary acute laryngitis is not attended with difficulty in breathing, which this distinguished patient had to an extreme degree. Moreover, ordinary acute laryngitis is a mild affection, never ending fatally.

2. *Quinsy.*—This is suggested by the chill, fever and very difficult swallowing, and probably also by the observation of Lear that when the patient attempted to use the gargle, he suffocated, and when the gargle came from the throat some phlegm followed. But that this should not be taken to mean the purulent discharge of quinsy is evident enough when you reflect that the latter occurrence is invariably followed by the most pronounced relief and generally by a prompt recovery from the ailment. Opposed to the idea that the trouble was quinsy is not only that a fatal termination in this disease is a most exceptional thing, but also that it is at any rate of quite rare occurrence in the aged. Quinsy is, furthermore, nearly always a unilateral disease; it causes a marked swelling on the outside of the throat, especially on the side affected, and usually causes the patient to hold the head toward that side and is apt to be attended with a trismus, that is to say, inability to open the mouth except for the slightest distance; none of these symptoms appear to have been noted. The swallowing in the case says the physician's statement was difficult rather than painful; but in quinsy painful swallowing is an outstanding feature. Beyond all this, there were symptoms in Washington's case which do not belong at all to the picture, viz., the hoarseness and loss of voice, and especially the difficult breathing.

3. *Laryngeal Diphtheria.*—The hoarseness and loss of voice, with increasing difficulty in breathing with eventual suffocation suggest the idea of diphtheria. Opposed, however, to this assumption is the fact that laryngeal diphtheria is eminently a disease of childhood and quite rare in the aged; secondly, the absence of any history of diphtheria in the neighborhood; besides, the usual clinical course of diphtheria is very different from that here shown, namely, a slow onset, with toxic symptoms comparatively severe, but local throat symptoms comparatively slight. The marked difficulty in swallowing does not belong to the picture of laryngeal diphtheria.

4. *Inflammatory Edema of the Larynx.*—This differs from the simple laryngitis which is an inflammation confined to the membranous lining of the larynx, in that it involves the

tissues lying beneath the mucuous membrane, that is, of the submucous tissue. It is characterized by dropsical effusion or edema of the submucous tissue, causing great swelling in the epiglottis and other parts of the larynx. As a result of the inflammatory swelling, there is marked difficulty in swallowing, which becomes painful and almost impossible when there is much involvement either in the posterior or anterior region of the larynx, especially if the epiglottis or lid of the larynx is swollen. When the infiltration encroaches upon the chink of the glottis, there occurs naturally difficulty in breathing, increasing it may be to the point of suffocation.

It is generally recognized as being due to the action of organisms of unusual virulence, especially the streptococcus. It is initiated by severe rigor, followed by a rise of temperature, attended by marked prostration, and the process is of rapid development, not infrequently ending fatally.

The symptoms and the course of the disease in Washington's case corresponds so exactly with a typical history of acute inflammatory edema that, despite our distance in time and the absence of modern diagnostic criteria, we have no hesitancy in setting up this as the correct diagnosis. The inflammatory type of edema must not, of course, be confounded with the non-inflammatory sometimes occurring as secondary to certain chronic organic diseases, as in Bright's disease, for instance. The edema in such instances is of a passive kind coming on slowly and not attended with evidences of severe local inflammation such as mentioned.

There are certain other acute throat troubles which might be thought of in connection with this case, as Vincent's or Ludwig's angina, but there is no justification for concluding their presence. Vincent's angina never assumes such an acute stormy clinical course, and Ludwig's angina cannot be diagnosed without the characteristic swelling in the floor of the mouth and the hard, board-like rigidity encircling the neck, which we have no reason to think were present in this case.

Before making any criticism of either the diagnosis made or the treatment instituted by the physicians in attendance upon Washington, it is very important that we bear in mind the difference in the state of medical knowledge between that era and the present, and especially the limited knowledge then existing with regard to disease of the lower throat, which is, in fact, a modern specialty.

It was fifty-six years after Washington's death that Manuel Garcia described before the Royal Society of Londan a method of examining the larynx, now universally practised, and it was even later when Pasteur and Koch had laid the foundation of modern bacteriology, now so essential in the diagnosis and treatment of diseases of every kind.

The eighteenth century was, as Garrison says, the age of theorists and system makers in the science of medicine, when tedious and platitudinous philosophizing upon *a priori* grounds was the fashion of the day. Little had been done to establish a definite pathology of throat conditions. John Fothergill, a close friend of Franklin and known for his sympathetic sentiments for the American cause, wrote in 1748 the first complete description of diphtheritic sore throat. John Huxham, whose name has become associated with the cinchona treatment of malaria, wrote in 1757 an essay on "Malignant Sore Throat," and Samuel Bard, of New York, who by an interesting coincidence was Washington's physician during one of his severe illnesses, published in 1771 a paper dealing with the subject of "Angina Suffocativa," referred to by Osler as a classic of the first rank. The diagnosis made in Washington's case by the attending physicians after consultation was "Cynanche Trachealis." This diagnosis has often been assailed as incorrect, but was it not correct according to the standards of classification then existing? At the period of which we write, Edinburgh, already famous for its surgery through the influence of the Monroes and the Hunters, had now also become the chief center for internal medicine largely from the prestige of such names as Cruikshank, Withering and Cullen. "First Lines in the Practice of Physics," by William Cullen, Professor of Medicine at Edinburgh, was at that time authoritative throughout the English speaking world at least, and we may well imagine that it was the chief source of information for Washington's physicians, especially as we know that Doctor Craik was a Scotchman born, and a graduate of Edinburgh, and Doctor Brown the son of a Scotchman and likewise a graduate from Edinburgh. Doctor Elisha Cullen Dick, notwithstanding his middle name, was not Scotch, but American born and a graduate of the University of Pennsylvania.

Cullen has a chapter in a work published in 1778, devoted to the subject of Quinsy, or Cynanche, of which he considers there are four varieties, viz., cynanche tonsillaris; C. maligna; C. trachealis; C. pharyngis; C. parotidea.

Of cynanche trachealis, he writes, "This name has been given to an inflammation of the glottis, larynx or upper part of the trachea, whether it affects a membrane of these parts or a muscle adjoining. It may arise first in these and continue to subsist in them alone, or it may come to affect these parts from the cynanche tonsillaris or maligna spreading into them.

"In either case it has been a rare occurrence and a few instances of it have been marked and recorded by physicians. It is to be known by a peculiar croaking sound in the voice, by difficult respiration with a sense of straightening about the larynx, and by an attending pyrexia.

"From the nature of these symptoms and from a dissection of the bodies of persons who have died of this disease, there is no doubt of its being of an inflammatory kind. It does not, however, always run a course of inflammation, but frequently produces such an obstruction of a passage of air as suffocates, and thereby proves suddenly fatal.

"If we judge rightly of the nature of this disease, it will be obvious that a cure of it requires a most powerful remedy for the inflammation, to be employed upon the first appearance of symptoms. When a suffocation is threatened, whether any remedies can be employed to prevent it, we have not an experiment to determine.

"As we suppose the disease to be an inflammatory affection, so we attempt a cure of it by the usual remedies of inflammation, and which for the most part we have found effectual. *Bleeding, both topical and general, has often given almost immediate relief, and by bleeding repeatedly has entirely cured the disease.* Blistering, also near to the part affected, has been found useful. Upon a first attack of the disease vomiting immediately after bleeding seems to be of use, and sometimes removes the disease. In every stage of the disease, an antiphlogistic requirement is necessary, and particularly the frequent use of laxatives. Though we suppose that a spasm of the glottis is often fatal in this disease, we have not found antispasmodic remedies to be of any use."

While vague as regards pathology, the symptoms described are such as correspond very closely to those of inflammatory edema as we call it today. The disease is seen as located, notwithstanding the name tracheal, in the region of the glottis or larynx; it is marked by altered voice, sense of constriction, fever and difficult respiration due to obstruction, and tending to end fatally. The diagnosis made

Dr. Samuel Bard.

by Washington's physicians was then correct, according to the nomenclature then existent, and we may say, taking Cullen as an authority, indicates very closely the true condition, as it is understood today. It appears from a letter written by Doctor Brown to Doctor Craik a very few days afterwards that the diagnosis was at first quinsy, and that the change was evidently due to Doctor Dick's influence. In this letter, too, Doctor Brown assumes that he with Doctor Craik should reproach themselves for the excessive bleeding. But, as a matter of fact, the term quinsy at that time was not a misnomer as it would be today. It is now generally understood to refer to an abscess of the tonsil or the peritonsillar tissue; but, originally, the term quinsy had the same significance as the word cynanche, that is to say, a suffocative affection of the throat, and we find that it is used

as a generic designation synonymously with cynanche by Cullen as the heading of his chapter on the subject.

With regard to the treatment of the case, after reading Cullen we cannot fail to be struck with the faithful adherence to the methods recommended by this great authority. Blistering, bleeding, emesis and catharsis are the main stays of his therapeutic regimen. In addition to them, Washington had the benefit of hot mustard foot baths, and hot steam inhalation, which form part of the present methods in the treatment of this class of throat affection. In regard to the bleeding, this had been the occasion of the chief condemnation visited upon Washington's physicians. It was with this in mind that Ford in his "True Washington" says, "There can scarcely be a doubt that the treatment of his last illness by the doctors was a little less than murder."

Such brutal cock-sureness of statement could emanate only from an opinionated layman, ignorant of the possibilities in such a case. If there is anything certain about the case it is that the chief factor responsible for the fatal termination was the asphyxia, due to obstructive swelling in the region of the glottis.

Admitting the possibility that the blood-letting was a contributory factor, no blame can properly be attached to Washington's physicians on that account. They were following the best authorities, instituted treatment orthodox in that day and, indeed, widely practised for the following forty or fifty years. With men of such influence as Benjamin Rush, in their own country, enthusiastically advocating the practice of blood-letting, and with Cullen specifically advising its use, with repetition to be of advantage in this kind of case, Washington's physicians would indeed have laid themselves open to censure if they had failed to use it as they did. It must be realized that Washington's illness was one with a tendency toward fatal termination. Moreover, he was not, as some have assumed, a man at that time in the full vigor of health, but presenting, as remarked by himself as well as by others, decided evidences of physical deterioration.

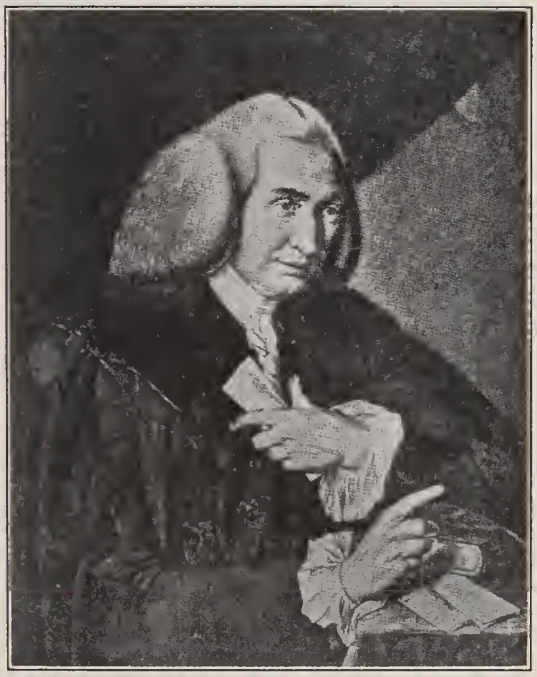
What treatment would we use today and what difference in result could we expect? It is at the very beginning of an attack of this kind that treatment is most effective, and very often simple measures will answer. A cold ice compress placed on the outside of the throat with pieces of ice to swallow; with laxatives, diaphoretics, simple diet, rest in bed, and especially rest of the voice is the line of treatment which today would generally be prescribed in the very beginning with hope of aborting an attack. In this connection, it is apropos to remark that Washington was himself guilty of an indiscretion which we regard as of much importance in the hygiene of cold-catching. On coming into the house, his neck, as remarked by his secretary, was wet and snow was clinging to his hair. He came to dinner which had been waiting for him, without changing his clothes. If Washington had but dried his neck and changed his clothes, it is possible that a glow of healthy reaction would have set up and his cold would never have developed.

The next day, signs of cold were present and he complained of a sore throat, but he was again indiscreet in going out in the afternoon in spite of cold inclement weather "to mark some trees which had to be cut down." In the evening he had a hoarseness but "he made light of it." There was evidently congestion in the region of the vocal cords, which is a condition that demands complete abstention from the use of the voice. But we learn that that evening, the distinguished patient spent the evening reading, and "when he met with anything interesting or entertaining, he read it aloud as well as his hoarseness would permit." On his return that night Mr. Lear observed that he had better take something to remove the cold. Washington's reply was, "No, you know I never take anything for a cold. Let it go as it came." The next morning at two or three o'clock, it had already reached a severe stage; he could scarcely speak and breathed with difficulty. Even then, this great man, more concerned for the comfort of others than himself, would not allow Mrs. Washington to get up and call a servant for fear that she might take a cold.

When by our modern method of laryngoscopy, we have demonstrated an edematous swelling of the tissues of the larynx, the first thought would be the application of adrenalin. This remarkable agent, discovered in 1901 by Takamine, has the effect of producing a powerful constriction of the blood vessels, lessening the blood supply and producing within a few minutes a blanching of the tissue and lessening the swelling. As its effects are only temporary, it is necessary to repeat at intervals the application. If the inflammation is too

intense to be conquered in this way, the next step is to practice what we call scarification of the tissue, that is, making short incisions into the infiltrated tissue which should bring about a reduction of the swelling by escape of the serous fluid from the mucous membrane. When these measures fail, more heroic surgery must be adopted. This consists in either the introduction of a tube by way of the mouth, allowing the patient to breath *per vias naturales*, or the opening of the windpipe by incision from without, that is, the operation of tracheotomy. The former operation, intubation, as it is called, was not introduced into practice until about 1856, by Bouchut and Trousseau, of Paris—still later perfected and made a practicable method by the labors of O'Dwyer, of Cleveland. It is true that the operation of tracheotomy was known in Washington's time; in fact, the opening of the windpipe was practiced sporadically even in the most ancient times, as shown by some obscure historical references, but it never at any time gained currency as an accepted surgical procedure. The criticism which has been aimed at Washington's physicians for not performing the operation is a very unjust one, in not taking into account the prevalent practice and opinion of the times. In the middle of the eighteenth century there were attempts here and there to introduce it into practice and, strange to say, for the resuscitation of drowned persons, upon a mistaken theory of the causation of death in such cases. Hume, of Edinburgh, as early as 1756, recommended the performance of opening the windpipe, bronchotomy as it was then called, for the relief of suffocation in pseudomembranous croup, but the first record of the performance for this condition is by Andree, of London, in 1782.

The fact is, as soon as one recommended the procedure for any purpose, he was immediately opposed by the leading authorities, and he would have few or no followers. It was just in the year 1798, one year before Washington's fatal illness, that Desault and Bichat, of Paris, the most eminent surgeons of that day, published their brochure on tracheotomy as a surgical procedure. In the work they took the stand that it was not a surgical procedure to be recommended in any form of angina. In the year of 1807, Louis Napoleon, having lost his oldest son from an attack of croup, called a conference of physicians and offered a prize of 12,000 francs for the best essay dealing with the subject. It was the universal conclusion that the operation of opening the trachea was useless and inefficacious in such cases. It was really not until 1826, after the appearance of the famous treatise of Bretonneau on Laryngeal Diphtheria, that tracheotomy was looked upon as a justifiable intervention. If, then, we condemn Washington's physicians for not giving him the chance of that operation, what would the world have said at that time if they had taken that chance and failed? It is an operation to which, when other measures failed, we would resort today, and with a fair chance



Dr. William Cullen (1712-1790).

that it would save the life of the patient: nevertheless, the best surgical authorities are careful to warn against too much confidence in its success in this class of cases, and of leading the family to believe that it is a certain means of averting death. Even when the asphyxia is completely relieved, there is great danger if the heart has been weakened in the struggle for breath, that death may ensue from cardiac failure.

Now, summarizing our knowledge of the case, taking into consideration not only all records with regard to this last attack of illness, and likewise in connection with it all available documents as to the patient's previous health history, his family inheritance and contemporary references to his pecularities of

constitution and temperament, we feel that we are entitled to certain definite conclusions.

In the first place, it is certain that Washington did not have quinsy as most often stated in the histories; nor diphtheria, as next frequently reported; nor ordinary acute laryngitis, as very often affirmed; nor pneumonia, as many believe; nor cancer, or tuberculosis, which have been here and there intimated.

All information leads us to believe that the malady responsible for his death was an acute inflammatory edema of the larynx, an affliction which attacks the tissue lying beneath the mucous membrane. It is characterized by a painful swelling of the structures of the larynx and the adjacent tissues below and above, including the epiglottis, causing great difficulty as well as pain in swallowing. When the swelling involves the glottis, the narrow gateway to the lungs, its obstructs the entrance of air and threatens death by asphyxia, or actual suffocation. And when it appears in a violent form, as in this case, it is, we may assume, actuated by some virulent micro-organism—in all probability the streptococcus. The diagnosis made by Washington's physicians, as given out in a statement five days after his death, *cynanche trachealis*, indicates that they had an idea of the location and nature of the malady, as near as it was possible in the limited knowledge then existent of this class of diseases,—in fact, much more nearly correct than the diagnoses which have found current acceptance in the opinions of our own day.

In regard to the treatment, while not that which we should administer at the present time, it was the orthodox treatment of that day. It followed closely the authority of the great Edinburgh school of medicine, of which two of Washington's physicians were themselves graduates. Bleeding the patient was expressly advised for this affliction, and its repetition recommended as the most effective means of combating its progress.

It was the widespread practice of that time, in fact for many years following, to take huge quantities of blood, and it may be incidentally mentioned that Washington himself was a firm believer in the practice and frequently ordered it for those of his household or the slaves upon the estate.

Washington's death was not due to excessive bleeding, as has been sometimes recklessly stated; it was the inevitable consequence of a relentless encroachment of the inflammatory swelling upon the narrow passageway at the glottis, cutting off the vitally necessary supply of oxygen, and associated no doubt with a general toxic infection from some virulent micro-organism, most likely the streptococcus. Unless relief comes otherwise in such a case, it is obvious that the patient, whether bled or not, must succumb from air starvation. Washington, then, you may be sure, was not bled to death; rather it may be said that he choked to death, for death was due primarily to suffocation.

At the present time in such a case *in extremis*, we would perform the operating of opening the trachea to allow the direct ingress of air to the lungs. There is a chance, though not a certainty, that it would save the patient's life from a fatal termination which, in such a case, is favored by the general toxic state and cardiac depression.

Washington's physicians are not to be censured for failure to perform the operation because its employment in such cases did not have the indorsement of the medical authorities of that day,—in fact, they were mostly opposed to it.

A survey of the health history of Washington's family and of his own personal previous illnesses indicates an inherited tendency toward inflammation of the respiratory passages. His father died by a peculiar coincidence under circumstances much the same as those of his own case, death occurring rather suddenly from a severe inflammation contracted as a result of exposure to inclement weather. Washington's half-brother Lawrence, had pulmonary infection, probably tuberculosis, which was the cause of his death.

Washington himself had during his life several illnesses affecting the upper or lower respiratory tract. During the Braddock campaign, he was for some time out of commission on account of an illness apparently of the nature of a contagious affection of the respiratory tract; in Boston, he had an attack of something like the influenza; he was the subject once or twice of a pleuritic affection; and he had once a nearly fatal attack of pneumonia. What, we may ask, would have been the fate of this country of ours, had not this great man succeeded in over-coming an evident inherent constitutional weakness by a rigid discipline of his physical energies!

With habits from youth of constant exercise

and a life adapted to the development of bodily vigor and a capacity for endurance, there was prepared for our country in its time of trial the one man who was equal to the situation.

The foundations of Washington's ill-health of his late years, and the beginning of the decline which led to his last illness was no doubt the abrupt change in the character of his life, necessitated by his taking up the arduous duties of the presidency. Very loath to assume the honors and longing constantly for his beloved Mount Vernon, his sense of duty and ardent patriotism held him too long, for the good of his health, to the exacting routine of adminstrative work.

We cannot refrain from drawing one other lesson from the case which we think of importance in connection with the subject of the seriousness of taking cold. A simple cold led directly to a fatal result. Two faults were committed, the evils of which should be emphasized; first, Washington, coming in from the storm with his clothes cold and wet, neglected to change—one of the most effective means for inviting the onset of a cold. Secondly, when the cold had produced a hoarseness, indicating that it settled in the larynx and affected the vocal cords, he persisted in using his voice in reading aloud, thus doing the very thing that would tend to increase the congestion and intensify the inflammation of the parts particularly affected.

Washington was exceedingly pessimistic about his own illness; he had made up his mind that he was going to die, and he did what he could to dissuade his physicians from making special efforts for him and let him die in peace. "I find I am going," he said to Mr. Lear. "My breath cannot last long. I believed from the first that the disorder would prove fatal." And, a little later, he repeated the same conviction to Dr. Craik: "Doctor, I die hard, but I am not afraid to go. I believed from the first attack that I should not survive it. My breath cannot last long." And later, when Doctor Brown came into the room, "I feel myself going; I thank you for your attention but I pray you to take no more

The Death Bed of Washington.

trouble for me. Let me go quietly. I cannot last long."

When he was ill in New York from carbuncle, Washington revealed a similar pessimistic attitude of mind and the same equanimity in the contemplation of death. Being alone one day with his doctor, he asked him his candid opinion as to the result. "Do not flatter me with vain hopes; I am not afraid to die and can therefore hear the worst." He gave expression, too, more than once to a premonition of death. He was but fifty-two years of age when he wrote to Lafayette, "I have often asked myself as our carriages separated whether that was the last sight I would ever have of you, and, though I wanted to answer 'no' my fears answered 'yes.'" In 1797, writing to another friend, he said, "To cultivate my farm, which requires close attention, will occupy the few years, perhaps days, I may be a sojourner here," and in September, 1799, in a letter to Colonel Burgess Ball, "I was the first and now the last of my father's children by the second marriage. When I will be called upon to follow is known only to the Giver of Life. When the summons comes, I shall endeavor to obey with good grace." And did man ever obey with better grace? Afflicted with a malady of the most painful and distressing character, he exhibited a patience and fortitude rarely seen. And mark through it all his never failing courtesy, his thought for the comfort of those about him, rather than for his own, and his sincere gratitude for services rendered him.

Truly, as he lived the life of a great general, and patriot, statesman, he died the death of a Christian gentleman.

The Rochambean.

THE DEBATABLE FIELDS OF PUBLIC HEALTH ACTIVITY.*

By E. G. WILLIAMS, M. D., Richmond, Va.
State Health Commissioner.

At the last meeting of the Medical Society of Virginia, I read a paper entitled, "The Legitimate Boundaries of Public Health Activities." The object in writing this paper was to bring before this organization certain activities of the State Board of Health so that they could be discussed and an expression of opinion obtained from the organized medical profession as to whether or not such activities should be continued.

*Read before the fifty-seventh annual meeting of the Medical Society of Virginia, at Norfolk, October 12-15, 1926.

At that time opposition by those interested in private laboratories was voiced against only one of the activities, namely, the free Wassermann examination by the State laboratory.

The vote following the discussion was overwhelmingly in favor of continuing the free and unrestricted Wassermann examination. Perhaps the other phases of the work were not discussed at that meeting due to the lack of time.

It is mainly my purpose in this paper to bring before you certain phases of the work which might be justly criticised and ask for discussion of same. Before entering upon a consideration of the activities, I should like briefly to explain the three jurisdictions of the public health field, namely, the Federal, State and Local.

The jurisdiction of the Federal Government is limited by the constitution to inter-State traffic and matters of common interest between the states; also between the State and foreign governments. It has no jurisdiction, strictly, within a state, and its representatives come into a State upon the invitation, or with the approval of the State authorities. However, the Federal Government is very helpful in public health matters to the State by its scientific research, investigations and demonstrations.

Under the very able and efficient administration of the present Surgeon General, the service is of great help to all of the States, and the States always welcome the presence of representatives of the United States Public Health Service. I think I can say without fear of contradiction that no one questions the activities of the United States Public Health Service as not being legitimate, or as conflicting with the rights and prerogatives of States or of the medical profession.

The jurisdiction of the State Public Health authorities extends to the confines of the State and is limited only by its financial resources, the statutes and the special charter provisions of the cities. The authority of the State Board of Health is so much larger than its resources permit it to cover that it gladly leaves to the local communities as much of the burden of caring for the public health as they are able and willing to carry.

The larger cities with their larger financial resources are usually abundantly able to give adequate protection to their citizens, but, on the other hand, the towns and counties are, as a rule, not able to make appropriations suffi-

cient to meet the health needs of the people. It is such communities that the State Board of Health feels that it must help to safeguard. It does so by co-operation. It helps the communities that need help and that are willing to help themselves. It does not necessarily go where health work is most needed except to offer its assistance to such communities on a co-operative basis.

The term Public Health is so broad that it is manifestly impracticable for one department to cover all the activities designed to safeguard the health and lives of the people. Among the health activities that are by statute placed under other departments of the State government are the supervision of food supplies. This is placed under the department of agriculture. The protection of the health and safety of those engaged in industry is under the Labor Commission. The supervision of drugs and the licensing of pharmacists are under the Board of Pharmacy. The licensing of doctors is under the Board of Medical Examiners. The licensing of trained nurses is under the State Board of Examiners of Nurses. The general supervision of institutions for the care of the indigent and sick is under the State Board of Public Welfare. Some have argued that the State Board of Health should have charge of protecting the people against the narcotic evil but this problem along with its colleague, prohibition, is properly placed under the police jurisdiction.

I will first briefly review those legitimate activities of the State Board of Health which are, I believe, without opposition.

When the State Board of Health was reorganized, the principle which guided those in charge of the work was that the activities should be limited to those measures which would protect all of the people in contradistinction to measures that were aimed for the benefit of the individual. The duty of the health officer is to all the people, the duty of the practitioner of medicine is to the individual. When the health officer deals with an individual, it is not so much for the benefit of that individual as it is to prevent that individual from endangering the public. It is sometimes necessary to public health for the individual to suffer in order to protect the rest of the people; for example, the victim of smallpox, or of any communicable disease is subjected to the inconvenience and discomfort of quarantine in order to protect the public.

The most important duty of a health department is to educate the people as to the causes of disease and the means of prevention. This should be continued until such information becomes common knowledge.

For the control of diseases it is necessary to have the reports of cases, as well as of deaths. A system must be established for the collection of morbidity and vital statistics, and so we have the Bureau of Vital Statistics.

To aid in the prompt diagnosis of communicable diseases, laboratory service must be available. At the public health laboratory examinations are made to aid in the diagnosis of only the communicable diseases. Examinations are not made for the diagnosis of noncommunicable diseases, as cancer or diabetes. In the laboratory, examinations are also made to determine the safety of drinking water.

The health officers must be prepared to study the outbreaks of communicable diseases to determine their cause and to apply prompt measures for their control. Among these measures is the free use of vaccines and preventive biologics. The State does not make provision for free biologics, preventive or curative, but many cities and counties do, and properly so, for the use of preventive biologics, as vaccines, is the most effective and economical method of controlling certain diseases.

To illustrate, with smallpox we know that quarantine can not be relied upon to prevent the spread of this disease. Vaccination alone is effective. The health officer knows that the surest and most efficient method of control is the use of vaccines. For this reason it would seem proper that the health officers should be permitted to administer the vaccines for smallpox and typhoid fever free; also toxin-antitoxin for diphtheria. Option, of course, should be given at all times for individuals to have such preventives administered by the family physician.

It is feared that if the health officers did not make full provision for these preventives, few people would go to their physicians for the service, and these diseases would be far more prevalent than they are now.

One of the primary duties of the health department is the supervision of the water supplies and sewage disposal and the abatement of nuisances dangerous to the public health, such as breeding places of disease-bearing insects, as mosquitoes. This supervision should cover private, as well as public water supplies

and sewage disposals, because these never affect individuals alone, but always have influence upon more than one person, or upon more than a single family. For this reason, public and private water supplies and sewage disposals and nuisances should come under the supervision of a public health department. The epidemiological work, for the control of communicable diseases, must be among the activities of the public health department.

Sanatoria are operated for victims of tuberculosis. Every victim is a potential danger to others. There are from 20,000 to 30,000 patients in Virginia. It is manifestly impossible to segregate or quarantine the victims. With the very limited capacity of the Sanatoria the problem was how to do the greatest good with the resources available. The principle adopted has been to use the sanatoria as educational institutions, to teach the patients the nature of the disease, its causes, means of transmission and cure, and to have as many patients as possible come under the influence of the sanatoria, so that they can go out from the sanatoria prepared to continue the treatment at home without danger to others. With the present demand for admission the sanatoria can not be used as segregation hospitals. The institutions can do the greatest good by taking the curable cases and limiting their stay so that more victims can be benefited. Unquestionably, it would help the cause greatly if there were more beds to care for advanced cases to segregate them, but our problem is to do the greatest good with the limited facilities.

I would now enter upon fields of activities of the health department that can perhaps be justly criticised. These are clinics for the diagnosis and treatment of diseases other than those that are communicable. These fields have developed since the war. An examination of school children and the draft examinations of citizens for the war revealed an astonishingly large amount of physical disability among the people. This question necessarily arose. Should the government feel the responsibility for the physical condition of the citizens? If it had a responsibility, how should it be met? Furthermore, if the government undertook the education of the children, should it not endeavor to see that the children were in the proper physical condition to receive the education, because it costs more to educate a child that is physically unfit? A large proportion of the children are physically unfit. Many of them are unable financially to have the physical defects corrected. For some who are financially able, no facilities are available: for example, more than 90 per cent of the school children have dental defects; seventeen of the one hundred counties have no dentists; sixteen counties have only one dentist; and thirteen counties have just two each. The significance of these figures may be best understood through this statement: In the forty-six counties above noted, there were about 700,000 people with forty-two dentists to meet their needs.

The State Board of Health was cognizant of this situation and realized that it was not in accordance with its policy to provide relief for individuals when such individuals were not a menace to the public. Yet here was a condition affecting a large number of citizens that could not for one reason or another get relief without government aid, not necessarily financial. There was no government agency empowered to give relief, no one to whom we could pass the "buck." It was a professional and medical matter and the State Board of Health had more professional men on its staff, so for these reasons the State Board of Health assumed the responsibility and has proceeded to attempt to meet the needs of the people until more satisfactory arrangements can be made.

The State Board of Health asked the State Dental Association for advice. A committee of the association was appointed and a remedy recommended. Their solution has worked so satisfactorily that last year 46,376 dental defects were corrected, according to their plan, among the school children of Virginia. This work has been done with the unanimous approval of the Virginia State Dental Association.

An inspection of several thousand school children showed that the majority needed operations for tonsils and adenoids. This matter was brought to the attention of the State Society of Eye, Ear and Throat Specialists with the request that they suggest how relief could be brought to these children. We are still waiting for advice and, until we do have advice from them or from the Medical Society of Virginia, the State Board of Health does not expect to assume any responsibility for the conduct of tonsil and adenoid clinics. At present tonsil and adenoid clinics are held by vol-

untary agencies or by local health departments.

It is estimated that there are in the State of Virginia twenty to thirty thousand victims of tuberculosis. Each of these is a potential source of danger to us. Furthermore, many in the early stages could be cured if their conditions were promptly and properly recognized. In order to reach these victims we began the conduct of chest clinics. In 1925 these were held in sixty-eight counties of Virginia; 8,818 people were examined; 1,998 were found to have tuberculosis; 6,507 were discovered with other physical defects. All of these were urged to visit their family doctors. There were found 8,027 who were not under the care of a doctor.

These clinics are held by doctors who are specialists, trained for this work. They are not permitted to treat any patients nor to receive fees for their services. If physical defects are found, the patients are urged to go to their doctors for treatment. No clinic is held in any community until every doctor in that community is visited and his co-operation sought. When doctors understand the nature of the clinic, they do not object. They are benefited because new patients are put under their care for treatment. The patients themselves are benefited and the public is protected.

The Child and Infant Welfare Clinics are conducted by specialists in children's diseases. The mothers are given verbal and printed directions for the care of their children. If any physical defects are found, the mothers are urged to take their children to their family physicians for treatment.

Special effort is made to reach the preschool children in order to have them physically fit before they are sent to school. Those conducting the clinic make every effort to impress upon the mothers the importance of having the family doctor keep watchful care over the child.

Orthopedic clinics are conducted jointly by the State Board of Health and the State Bureau of Industrial Rehabilitation for adults and children. This plan was worked out following conferences with the ten orthopedic surgeons in the State. The professional services rendered in these clinics is done by the ten orthopedic surgeons, each having his own district. Some of the patients are treated at the clinic and those able to pay are referred to their doctor, or are treated privately by an orthopedic surgeon. If they are able to pay, they may go to any hospital they may prefer. If they are unable to pay for hospital care, they can be admitted to one of the State supported teaching hospitals connected with either the University of Virginia or the Medical College of Virginia. The appropriation of twenty-five thousand dollars made to the State Board of Health for orthopedic cases is spent for the hospitalization of indigent cripples at one or the other above mentioned institutions.

During the war the Federal, State and Local Governments assisted in maintaining venereal disease clinics. At present neither the Federal nor the State Government assists in such clinics, some of which are maintained by certain local health departments or hospitals.

There is another field of health work that official bodies have not taken up but which in the course of time may be brought to the front for consideration. Up to the present time the span of life has been lengthened by reducing the diseases that carry off the people under the age of fifty. The expectancy of life of those beyond fifty has hardly been touched, although more people now reach that age. The prolongation of life of those over fifty is a matter of personal, not public health. The sickness and death of those over fifty are probably due to improper personal hygiene or focal infection, or endocrine disturbance, and can be avoided by following proper advice of personal hygiene suitable to each individual or finding out and removing the focal infection.

Already volunteer agencies are entering this field of service in some places. This is a field in which the regular profession is concerned and it should take an active interest in the situation.

I have thus briefly brought up some of these problems in which the medical profession is concerned and in which government doubtless has some responsibility. It might be mentioned that as the State contributes largely to the medical schools to educate doctors, should it not also be concerned in making the services of the doctors available to all the people? It is not to be expected that the doctors should render services without adequate compensation or that services should be given free to any one able to pay, but the services should

be available to all the people in accordance with their ability to pay.

How may the professional services of doctors be made available to people in the sections where there is a scarcity of doctors and specialists, and through what government or volunteer agencies?

Shall the State Board of Health assume the responsibility? Shall it be the State Board of Public Welfare (formerly the State Board of Charity and Corrections), or shall it be as extension work of the Medical Schools, or shall such responsibility be left to the American Red Cross, the Civic Leagues, or other volunteer agencies? If some proper agency does not bring professional services to the people and meet their needs, such field will be taken by advertising quacks and fakirs. Already this is taking place in parts of the State where regular medical service is not available to the people. This is as inevitable as the fact that weeds will grow in a garden that is not properly cultivated.

The medical profession has a deep interest in this situation. It can take the lead in solving the problems. Its best interest should be the interest of the people and humanity. At the present time the State Board of Health is attempting to work it out. This is not because it thinks it knows the solution or thinks it is able to do it better than others. We think the medical profession ought to solve it. The State Board is more largely composed of medical graduates than any other State Board. We would most cordially welcome the organized medical profession in this field and would either co-operate with them to the utmost or even turn the problem over to them for administration. If they will not take it over, we would most earnestly ask their sympathetic interest and constructive criticism and positive assistance. Our civilization is advancing. The social order is demanding for the people the rights and benefits of a protecting government whose fundamental function is to give to its citizens safety in the pursuit of happiness. When modern medical science offers longer life, security against sickness and suffering and a fuller enjoyment of physical strength and welfare, the people are going to demand these privileges for themselves and their dependents. The medical profession holds in its possession this golden bowl of blessings. Will it voluntarily offer it to the people of the land?

DISCUSSION

Col. C. R. Keiley, *State Health Department, Richmond*:—I had hoped that I should be able to talk later, when or if objections to Dr. Williams' paper had been urged; but I appreciate greatly the compliment extended to me in being asked to talk to it at any time.

I am not in the least inclined at any time to give hot air, and when I tell you, gentlemen, that from the very inception of the State Board of Health the one constant and continuing purpose of that board has been to avoid absolutely any idea of State medicine, it is not because I am talking to a society of doctors, who necessarily are vitally interested in that question. We people who are doing the health work there in Richmond know that we should not have as fine a medical society in Virginia as we have today and as fine a profession in Virginia as we have today if the State should start to hiring well paid rivals to you. Necessarily your ambition would be lessened, and new, ambitious men would not come into the field. That is one reason.

Then we are prompted by a second reason, which is a very intelligent self-interest. This view was taken long before I came into health work in Virginia. We can not hope to do our work, we can not hope to extend our work without the help of the physician. We can not fight the doctors. In the country districts the local doctor is a leader of men. Our policy is to help the public, but our policy is not to hurt the doctor; on the contrary, it is to help the doctor.

We have three kinds of clinics, which are very clearly demarked. One is the preventive clinic. It may be questioned if a medical society or a large proportion of the medical members of a community object to our giving or administering free, the beneficiary paying generally for the materials, the preventive vaccine. I think that is very seldom objected to; there is practically no objection to our preventive clinics anywhere—typhoid, smallpox and toxin-antitoxin. Then, again, we have diagnostic clinics, clinics not for treatment but for diagnosis only. I can not understand why the general practitioner objects to our T. B. clinics. The doctor has had under his care a case showing fatigue, slight weakness and possibly some loss of weight, but which he does not think indicates tuberculosis. He sends the case to the clinic, and the clinician says it is a suspicious case and refers the patient for further examination and study. Now, if the clinician should say in a suspicious case that it is tuberculosis and we are informed about it, that clinician will not be with us long. We do not give advice in our clinics except ordinary advice as to fresh air and rest, and very little of that. We tell the patients to report to the family physician and we report privately to the physician.

As to tonsil-and-adenoid clinics, we have none; we would be discussing something which is nonexistent. I heard some comment in an undertone some time ago, when Dr. Williams made that statement. We can not prevent nor can you prevent any volunteer organization from having a clinic of any kind anywhere, but we can prevent and do prevent our people from having any part in it. It has happened in the past, I am sorry to say, that even when the local medical society objected such clinics have been held; but that can not happen in the future. We are putting more and more power in the hands of the local medical profession, especially local health boards.

As to the child-welfare clinics, there has been some objection to them. Some of the objections are well founded, but they can hardly be traced to any malfeasance or misfeasance on our part. Charitable

people put up a lot of money and, being all dressed up with nowhere to go, put on clinics. The women some time ago became obsessed with the idea of clinics; they wanted every child diagnosed and cured at those clinics. We do not do any curative work; all we do is diagnose, and I want to assure you that as rapidly as possible we intend to turn over the child-welfare work and tuberculosis work to the local medical society.

I think our health work in Virginia as conducted by Dr. Williams, is on such a plane as to disabuse any practitioner of the idea that we wish to take his prerogatives. We know that as the boundaries of medical knowledge are extended each year and as new and better men come into the profession, we are going to do more toward prolonging life. Every one of you here is an evangel of public health. There is not a doctor in this room who does not tell people how to care for themselves and how to care for those around them. We want your help and want to do absolutely everything we can to help you boost your practice, if I may use that expression, because your work is what ours aims to be, the cutting down of the incidence of sickness and the lengthening of life in Virginia.

Dr. J. W. Preston, *Roanoke*:—Dr. Williams, as Health Officer, is better acquainted with the diminishing supply of physicians in rural districts than most of us, but we who are connected with the Board of Medical Examiners have it constantly impressed upon us.

The physician, along with the blacksmith, carpenter and country store-keeper, has been caught in the economic drift to the City. Preventive Medicine has practically made epidemics such as Typhoid, Dysentery, and Diphtheria things of the past. Sanatoria are caring for the Tuberculous and have tremendously limited its spread. Chronic diseases amenable to surgery are cured as never before. So upon the whole, aside from the lessening population in rural districts, the incidence of diseases and the disorders treated at home is very much less, so that fewer physicians can be supported comfortably in such districts.

People move faster nowadays; a progressive physician finds it difficult to content himself, certainly in such country districts as have poor roads, where half to two-thirds of his time is spent in going to and from his patients, when in a better section of the country he could spend a greater portion of his time in closer contact with those who are accomplishing more for themselves and families, at least in an intellectual way, if not financially. As a result, as the older men die, younger men are not taking their places in the rural sections.

It cannot be held that the Examining Board of this state has become too exacting, for you will doubtless be interested to know there has not been a single failure before the Board within the past three years, thanks to the better work being done by the Medical Schools, and the better pre-medical training. The Medical Schools are almost without exception filled to capacity and more men are being graduated than five years ago, but they are not locating in the rural districts.

What is to be done? I know that Dr. Williams is doing the best that he can to meet the situation. He maintains a directory of rural sections in most need of physicians and endeavors to direct inquiries of those who wish to come into the state, or who wish to change their location to such localities. He is endeavoring to train the country people in the fundamental laws of health and the rudiments of nursing and has made wonderful progress.

It has been suggested that men from the lower grade schools who cannot meet the requirements for practice in the more thickly populated centers, be allowed to practice in the rural sections. It has further been suggested that medical courses be shortened for those consenting to practice in such localities. Theoretically, this sounds good, but it has been tried elsewhere and has not worked out in practice, since no means has been devised whereby such men can be prevented from moving. Another argument against it is that people in the rural districts are as much entitled to high grade practitioners as those elsewhere. The problem is much broader and deeper and in my opinion will not be met until through state agencies or otherwise rural communities are awakened to two fundamental propositions:

The one, basic to all development, public schools that can compete with those in the centers; the other, a network of roads that can be traversed at all seasons which is of equal importance in so far as a physician is concerned. With these things accomplished in rural sections, the economic drift from the centers back to the country must and will sooner or later turn.

The creation of a loan fund, in addition to the scholarships now offered by the Medical Institutions of the State, such fund to be placed in the hands of deserving students from rural districts with some stipulation that they practice in such districts at least until the money be refunded is perhaps worthy of consideration. Despite its evident dangers, it may be that the development of rural community hospitals is destined to play an important part in the future solution of the problem.

THE MEDICAL PROFESSION OF VIRGINIA AND STATE MEDICINE.

By J. SHELTON HORSLEY, M. D., Richmond, Va.
President of the Medical Society of Virginia.

All over the United States there comes the cry from the ranks of the regular medical profession of the tendency toward state medicine and of the infringement of state medicine upon the rights and privileges of the individual doctor. That this condition actually exists admits of no denial. The situation must be faced and some remedy for it devised.

First of all, we must realize that the ultimate object of the medical profession, whether expressed through the efforts of state medicine or through the practice of individual doctors, is to save human life and to relieve human suffering. This is not a mere academic statement; it is the practical principle upon which the existence of the medical profession depends and any legislation or rules and regulations that ignore this principle are based on false premises and should fail. There are, however, many honest differences of opinion as to the best method by which this object can be attained. It must be remembered, too, that such aims are extensive in scope. They include not only physical organic suffering, but mental attitudes and the behaviorism of human beings. The practice of a certain amount of psychology, the correction of vicious mental

habits, the stimulation for a better moral life, are just as much a part of regular medicine as the treatment of pneumonia or diphtheria or the removal of a ruptured appendix. Naturally, with such a wide range no one individual can cover all the different departments, so that medicine has come to be divided into numerous specialties. With some it is a question whether there are not too many specialties, but it is undoubtedly necessary that specialism must exist to some extent in order to attain the maximum benefit in many of these various lines of work. One of the most prominent, and one of the most alluring, specialties in recent years is public health work. It is not particularly remunerative for the individual who practices it, but the prospect of preventing sickness, of stamping out smallpox, diphtheria, typhoid fever and malaria, of preventing hundreds of cases of illness while the average practitioner would probably be curing only a very few, is enormously attractive.

In the nature of things there must, of course, be not only prevention but cure. Sometimes it is difficult clearly to separate these two branches, though usually they admit of distinct lines of division. In order to attain the greatest good it is necessary that preventive medicine, with such agencies as the State Health Department, and the general practitioner shall co-operate. This is not only necessary for idealistic purposes, but, practically, the people of Virginia have a right to demand the greatest relief from disease that can be afforded them, and if for any reason the medical profession of Virginia does not co-operate with the Public Health Department the people will eventually force matters so that the Health Department must dominate completely.

The degree of enthusiasm and intelligence with which the individual doctor co-operates with public health movements stamps his citizenship. At the same time it is equally essential for the State Health Department to recognize the rights of the individual doctor and give him every opportunity to assist in the work of preventive medicine. If after these opportunities are granted he will not assist, the only thing the Health Department can do is to protect the people even if it becomes necessary to inflict some real hardship upon the individual practitioner.

That the State Health Department should as a general policy co-operate with the individual doctor is obvious. Every doctor is to some extent an unconscious health officer. Even though such remedies as diphtheria toxin-antitoxin can be administered by a nurse, there may be occasional instances in which even such simple remedies should not be given without a physical examination of the child. Then, too, in the question of diagnosis the doctor is indispensable. His recognition of cases of diphtheria, of scarlet fever, of tuberculosis, of appendicitis and of cancer is entirely necessary before intelligent treatment can be applied. Until some universal serum is invented to cure all diseases, the family physician and the general practitioner are essential parts of any movement for the maintenance of the health of the people.

I have recently heard that Dr. E. G. Williams, the head of the State Health Department of Virginia which has done such splendid work, has in mind a campaign for the administration of the toxin-antitoxin of diphtheria that should practically eliminate diphtheria in the State of Virginia. This remedy is a type of vaccine along lines somewhat similar to that for the prevention of typhoid fever. One immunization comprising three injections produces immunity from diphtheria for an indefinite period of time in about 87 per cent of all patients. In the remaining 13 per cent subsequent immunizations may be required. This administration is simple and can be given by any one competent to give a hypodermic injection.

The universal administration of this remedy to children would stamp out diphtheria. The question is, how may it best be administered? Would it not be preferable to have the doctors in each county organize among themselves as a county medical society and let each doctor be responsible for the families upon which he practices and see that these children are properly given this serum, and then report to the Health Officers, than to have outsiders take entire control? Cases that cannot be reached in this way may be immunized at general clinics throughout the county held under the supervision of the doctors of the county. Patients who are not able to pay should be given the treatment free. Those who are able to pay, and particularly when it seems necessary that an examination of the child be made, should of course pay whatever fee the attend-

ing physician thinks just. The medical profession of every county, however, should see that every child within the limits of that county has received this immunization.

If the medical profession will co-operate, I believe the State Health Department stands ready to help in every way it can. If each county, or several counties grouped together, will arrange a meeting of their doctors, the Health Department will send experts to give them a clinic, not only to talk, but to show how the diphtheria toxin-antitoxin or any other of the newer preventive remedies, such as smallpox vaccination without an abrasion, can be administered. I have the assurance of the officers of the Health Department that they will be delighted to do this. In this manner preventive measures can be carried out under the general supervision of the Health Department, through the medical profession, and, first and foremost of all, the children and the people will be protected.

If the medical profession will co-operate in this way, the individual prestige of each doctor will be preserved, it will be a visible demonstration to the laity of the desire of the medical profession to live up to its professed ideals, and the opportunity for extending its influence and of increasing the power for good of its members will not be neglected. If, however, the medical profession will not do this, the public and the legislature will probably demand that measures for the prevention of diphtheria and other diseases be taken regardless of how it affects the doctors who do not seize this big opportunity that assistance in these matters will give.

May I earnestly suggest that the officers of every county medical society and of every district medical society, and, in counties where there are no organized medical societies, that the individual physicians, write to the State Health Officer assuring him of their willingness to co-operate in this matter and at the same time offering any suggestions or criticisms that they may care to make? Every death from diphtheria that occurs through unnecessary delay is a direct reproach upon the medical profession in Virginia. Let us, then, take advantage of this magnificent oportunity at the earliest possible moment.

THE ROENTGEN RAY TREATMENT OF SUBACUTE INFECTIONS.*

By VINCENT W. ARCHER, B. S., M. D., University, Va.
From the Department of Roentgenology, University of Virginia Hospital.

During the past year or so, there has been considerable discussion concerning the treatment of infections by radiation. Hodges, in 1924 and 1925, reported very good results in a series of carbuncles treated in this manner. It is the feeling of many roentgenologists, that we have in the ray a modality which is of distinct value as a local stimulating agent, and it was this feeling which led us to try small doses in the treatment of sub-acute infections. Our theory was that in any subacute infection there is a slight imbalance between the relatively low virulence of the infecting organism and the resistance of the local tissues, with the balance in favor of the organism. If this be accepted as true, then, by stimulating the local tissues, we should be able to throw off the infection. This we attempted, using the roentgen ray as the stimulating agent.

In our series we have had several carbuncles, in which the results were uniformily good, but since this phase of the subject has been so thoroughly covered by Hodges, Dunham. Richards, Lewis, and others, this group will only be mentioned in this paper. Aside from carbuncles, we have treated twenty-four cases of subacute infections, all of which showed more or less cellulitis, and with only three exceptions we have felt that there has been a distinct improvement, which would not have been expected in the course of the infection when treated in the usual manner. This improvement is manifested in shortening materially the period of the infection, almost invariable relief from pain, and the establishment of drainage through the preliminary incisions.

We have had four cases of the type of infection seen so frequently in old, dilapidated people, consisting of diffuse infection of the dorsum of the hand, and it was a case of this type which we treated in March, 1924, that made us first follow up this line of therapy. Since this case is of peculiar interest in this respect, it will be reported briefly.

Case 1.—Mr. J. P., seventy years old, had had an infection covering the entire dorsum of the left hand for a period of about six weeks. It had been widely incised twice, with no appreciable improvement. The man had been returning every two or three days for soaking in antiseptics, and to have his dressings

*Read before the fifty-seventh annual meeting of the Medical Society of Virginia, at Norfolk, October 12-15, 1926.

changed, with no signs of improvement. As a last resort, and as a result of several conversations concerning the theory of stimulation by the ray, the case was turned over to us for roentgen treatment. One-fourth of a skin unit of unfiltered radiation was given, and the patient was told to return in a week. When he returned, the incisions had healed and the surgeons discharged the case as well.

As this was the first case, we thought that the healing might have been a coincidence. The other three cases of this same type of infection which have been treated, led us to believe that the ray was responsible, for two of these healed immediately, and the third showed a marked improvement. We wished to treat this last case again, but on account of the patient's fear of X-ray in general, we thought best to let it alone. This last case showed a peculiar reaction in that the incision which had been perfectly dry for eighteen hours prior to treatment developed a serous ooze after a four minute treatment, to such an extent that it covered the dorsum of the hand.

Case 5.—Treated, but died as result of pneumonia soon after, and will consequently be disregarded.

Case 6.—Thyroiditis, in which an incision was made, but no pus found. This condition had lasted for about two weeks prior to treatment, with a temperature ranging from 99.5 to 101 F., having a temperature of 100 the day before treatment. A few hours after treatment, there was a profuse discharge, and the temperature went to subnormal, and did not return above normal while the patient was in the hospital. The case was discharged as "well" one week following treatment.

Case 7.—Ludwig's angina in a child three years old. The child had cyanosis and dyspnoea and a large submental induration. An incision was made, but no drainage obtained. A treatment on March 30th was followed immediately by a copious discharge, and the patient was discharged on April 4th as "well."

Cases 8, 9, 10.—Cases of cellulitis of the neck. Two of these were not incised and did not break down and localize for some time. The other one was incised and treated promptly, and soon began to discharge, improving almost immediately.

Case 11.—Axillary cellulitis. Miss K. G., age 19. Incision and drainage with no results. Treatment with the ray followed by prompt drainage and loss of induration. The same area, however, again became indurated and was treated twelve days later with the same results, and again eighteen days after this with similar effects. This case is quite interesting in that it practically eliminates coincidence, since in the same treatment throughout, on three occasions, the induration disappeared, and there was a copious discharge immediately following treatment.

Case 12.—Infection of the alae of the nose, almost carbuncular in appearance. This drained profusely and in four days was well.

Case 13.—Cellulitis of the bridge of the nose. Incised from within without obtaining any discharge. Treatment with the ray. Returned in two days for observation and was discharged as well.

Cases 14, 15, 16.—Furunculosis with cellulitis and without definite pointing. All improved, and localized very soon after treatment.

Case 17.—Recurrent furunculosis 10 to 12 in number, on the back, recurring every three or four weeks. Six treatments were given, after which the patient was discharged, during last January. There has been no recurrence since that time.

Case 18.—Cellulitis of finger. Treated, but unable to follow up on account of the patient's leaving town. We heard that she was much improved when she left, but have been unable to verify this.

Case 19.—Furunculosis of left nostril, with cellulitis of left orbit, in a child four years old. When first seen, had a furuncle on left nostril, with left eye almost closed by edema of entire left side of face. Treated, with no improvement, dying two days later, the entire face being involved at that time.

Case 20.—Cellulitis of scalp, from orbit back to auricle, following puncture with stick several weeks ago, and had been draining since. Two weeks after treatment, the drainage had ceased and the patient was discharged as "well." He has just come back with a recurrence, and is now being treated again (one month later).

Cases 21, 22.—Cellulitis of the side of the face, both apparently originating in infected teeth. These were red and markedly swollen and painful when admitted to the hospital. These were incised and treated immediately. According to the surgeons in charge of these cases, the duration of the infection was much shorter than would have been expected following the usual routine. Both were discharged as well in two weeks.

Case 23.—Cellulitis of the knee. Incised, treated, and discharged as well in three days

Case 24.—Extensive lymphangitis of foot following infection on the dorsum of the second toe. A very small incision was made in the toe, the entire foot was treated, and the redness was all gone in two days. There was no change from the treatment which had previously been given except incision and roentgen treatment.

The dosage in these cases varied from one-fourth to one-half skin unit, some being given filtered and some unfiltered, depending on the depth of the induration.

Our work, up to the present, has been confined entirely to the clinical side of this problem, but we hope at a later date to present some experimental studies along this line. A great deal of work has been done on the biological action of the ray, and it would not be amiss to briefly summarize the experimental and clinical data which has a bearing on this type of treatment.

Pohle, by use of the skin microscope, using 50 per cent of a skin unit dose, shows paralysis of the capillaries in six hours after exposure. This reaches a maximum in twenty-four hours, and then for some days appears and disappears in cycles, ranging from normal to dilatation.

Fried reports an increase in the formation of bactericidal substances.

Siedamgrotsky showed a greater permeability of the capillary walls at first, followed by a decrease.

Passow, Arnold, and Pauli demonstrated the bactericidal action of cathode rays on a rab-

bit's eye infected with staphylococci and B. coli.

Ewing stated that it was his belief that radiation increases the permeability of the cell membrane. There are also vascular changes, according to him, consisting of hyperemia, with vaso-dilatation and exudation of serum and leucocytes. He is convinced that practical irradiation acts very largely through the vascular disturbances in the parts treated.

Purely from clinical observations, we believe that the increased drainage noted almost invariably in our series is dependent upon the vascular changes, and that the good results obtained are due to two factors. The first is that hyperemia is induced in the part exposed by increasing the permeability of the capillaries. Secondary to this, there is a lavage of the infected part which carries away with it much of the toxic material.

Summary

We feel that no definite conclusions can be based on our small series of cases, but we feel that there has been marked improvement in certain cases of low grade infections, particularly those in which no localization has taken place. We also believe that better results will be obtained with preliminary incision, even though there is neither fluctuation nor localization.

Bibliography.

Hodges: *Am. Journ. Roentg.*, May, 1924.
Hodges: *J A. M. A.*, Oct. 3, 1925, p. 1292.
Pohle: *Radiology*, March, 1926, Vol. VI, No. 3.
Ewing: *Am. Journ. Roentg.*, Vol. XV, No. 2, p. 93.
Passow, Arnold and Pauli: *Klin. Wchschr.*, Nov. 26, 1925, Vol. IV, pp. 2292-2295.
Siedamgrotsky: *Strahlentherape*, 1925, XIX, 84-123.
Fried: *Strahlentherape*, 1925, XXI, p. 56.
Klovekorn: *Strahlentherape*, 1925, XX, p. 351.

THE NORMAL KIDNEY.*

By WILBUR M. BOWMAN, M. D., Petersburg, Va.

Introduction

A comprehensive knowledge of a normal organ is imperative in order to ascertain the extent of destruction or to reach a diagnosis from the pathological findings. This is all the more essential in case of the kidney as there is perhaps no finer example in the human body of the inter-relationship of structure and function. The professor in pathology impresses upon the student a phrase which he rarely forgets, namely, "know the normal first." To undertake to present the last word in regard to the kidney would be no more strange than to attempt a paper on brain operations, which subject rightfully belongs to some of the eminent specialists. I have nothing original to offer. The material contained herein is compiled from the important works of those who have labored to give us a true conception and new lines of thought. Therefore, if I can do no more than simply bring before you in a clear, concise form, or a review, so to speak, of the normal kidney in so far as it is concerned with our understanding of the pathological without necessitating an enormous amount of detailed and tiresome information, I shall feel grateful.

General Structure of the Kidney

The kidneys are situated in the posterior part of the abdomen, one on each side of the vertebral column, behind the peritoneum, and surrounded by a mass of fat and loose areolar connective tissue. Their superior extremities are on a level with the upper border of the twelfth dorsal vertebra, their lower on a level with the third lumbar. The right kidney is usually slightly lower than the left, probably due to the large size of the right lobe of the liver. The long axis of each kidney is directed downward and lateralward; the transverse axis backward and lateralward.

Each kidney is about four and one-half inches in length, two and one-half inches in width, and rarely more than one and one-half inches in thickness. The left is somewhat longer and narrower than the right. In the adult male the weight varies from 135 to 170 grams; in the adult female from 115 to 155 grams. The combined weight of the two kidneys in proportion to that of the body is about 1 to 240.

The characteristic bean-shaped organs present for examination two surfaces, two borders, and an upper and lower extremity.

The kidney is covered by a firm, smooth, fibrous tunic which may be easily stripped off. A thin, unstriped muscular covering lies beneath this tunic. A fatty layer invests the capsule. After the capsule is stripped off, the surface of the kidney is found to be smooth and of a deep red color. Though dense in texture, the organ is easily lacerable by trauma.

A vertical section of the kidney parallel to its long axis extending from its convex surface to the hilum, readily shows the parenchyma to be composed of a superficial narrow

*Read as part of the symposium on The Kidney before the Southside Virginia Medical Association in Petersburg, September 14, 1926.

cortex and a central or deeper portion—the medulla. The latter consists of a series of red colored, striated masses called renal, medullary, or conical pyramids which receive the urine from the uriniferous tubules that open upon their surface. The cortical substance is reddish-brown in color, soft, and granular in appearance. It lies beneath the capsule, arches over the base of the pyramids, and then dips in between adjacent ones toward the renal sinus. The slit-like hilum of the organ opens into a deep or central cavity, the renal sinus, which is composed of the upper part of the renal pelvis and its subdivisions—the infundibula and calyces. The pelvis of the kidney is a funnel-shaped sac, wide above and narrow below where it joins the ureter. The expanded portion toward the renal parenchyma divides into two, sometimes three infundibula, which in turn subdivide into seven to thirteen calyces or cup-shaped tubes, each of which encloses the conical apex of a projecting medullary (Malpighian) pyramid.

The Medulla.—This usually consists of from 12 to 15 renal pyramids. Each apex is received into the extremity of a renal calyx though occasionally it may contain two papillae. The base of each pyramid, the boundary zone of the medulla, is imbedded in the adjacent renal cortex. Thus each renal or conical pyramid is divisible into two parts, a central free portion, the apical or papillary zone and the boundary zone. The latter contains only narrow tubules and is highly vascular while the papillary zone, relatively deficient in blood vessels, contains the broad terminations of the uriniferous tubules, the papillary ducts, which converge toward the apex of the pyramid where they open into the calyces.

The Cortex.—The cortex may be divided into several parts. The so-called medullary rays are the numerous dark lines or delicate columns which radiate from the base of the pyramids toward the surface of the kidney. The straight portions of the tubules are continuous with those in the boundary zone of the medulla. Jordan states that it would seem better to call these rays "cortical rays" instead of medullary as they lie within the cortex instead of the medulla, but are so named because of their peculiar relationship with the latter.

That portion of the cortex containing the extremely tortuous tubules is characterized by the presence of the familiar small, globular bodies, each of which contains a tuft of capillary vessels, these being called renal corpuscles or Malpighian bodies. These bodies are characteristic of the kidney. The renal labyrinth is that portion of the cortex including the renal corpuscles and the entire cortex excepting the cortical rays.

The Renal Lobule.—In fetal and infantile life the kidney is definitely lobed. Although this condition is permanent in some animals, in man after the first year, the renal lobes completely fuse, leaving scarcely a trace of the early lobed condition.

The Renal Connective Tissue.—The outer covering of the kidney has been previously mentioned under the general structure. In the connective tissue of the hilum are found the larger arteries and vessels, sympathetic nerve fibers, and a few small ganglia. Interstitial tissue in the interior of the organ, which is very scanty, loosely invests the tubules. The tissue is slightly increased in amount about the larger blood vessels, the renal corpuscles of the cortex, and the small blood vessels of the boundary zone of the medulla. The large papillary ducts at the apex of the renal pyramids are invested in large quantity.

The Uriniferous or Renal Tubules

Now to trace or follow the course of a uriniferous tubule which is one of the characteristic features of the kidney. Beginning in the cortical labyrinth as the capsule of a renal corpuscle, the tubule then assumes a tubular form and pursues a tortuous course through the labyrinth and finally enters the boundary zone of the medulla. It is at this point that the loop of Henle is formed. The tubule is much reduced in size, consists of a short, descending thin limb, a U-shaped loop, and a long ascending or thick limb. The ascending portion recrosses the boundary zone of the medulla, enters the cortical ray, and returns to the region of its origin where it again becomes convoluted. This portion is connected to a straight collecting tubule by a short arched tubule. The collecting tubules of the cortical ray extend the entire length of the ray, uniting with others and receiving arched tubules along their entire course. Having cross the boundary zone of the medulla, the combined straight collecting tubules form the large terminal tubules, or papillary ducts, which pour the urinary secretion into the calyces at the apex of the renal pyramid.

The Renal Corpuscle

Also characteristic of the kidney, of course, is the renal corpuscle or Malpighian body. It consists of a spherical tuft of capillary vessels known as the glomerulus which, during the course of its development, is invaginated into the end of the uriniferous tubule. It is thus invested by a double layer of flattened epithelial cells known as the glomerular capsule (of Bowman). The surfaces of these two layers are almost in apposition. The visceral layer (inner) of the capsule closely invests the entire glomerulus except at the entrance of the blood vessels which are opposite the neck of the capsule. The connective tissue uniting the capillaries within the glomerulus is very scanty and delicate. The epithelial cells of the visceral and parietal layers are cuboidal in fetal life but become more and more flattened as development progresses.

The glomerulus consists of an afferent and efferent artery. On entering the corpuscle the afferent vessel breaks up into capillaries which later unite and leave the corpuscle by the same route of entrance but as the efferent artery. Noteworthy in relationship to the intraglobular blood pressure is the fact that the caliber of the afferent vessel is larger than that of the efferent.

Renal Physiology

The Functional Character of the Kidney.—In both development and structure the kidney differs from all other secretory organs of the body. It is of mesodermal rather than epithelial origin. The kidney exists to remove substances already present in the blood. It is concerned with the selective removal of relatively simple crystalloid waste products, in the maintenance of osmotic pressure, and reaction of the blood. Its synthetic products are hippuric acid and "probably a small amount of urinary ammonia" (Hench). With this exception there is no definite fact which leads one to believe that the kidney normally forms anything, although many efforts have been made to endow this organ with an internal secretion. In general, then, it may be stated that the kidney is almost excretory in character. Poisonous products are separated from the blood and excreted as urine. At the same time the kidney prevents the undue elimination of food products and substances vital to the human body.

The Relationship of Structure and Function.—The kidney is a compound tubular gland. The structural parts of urine formation consists of the glomerulus and the tubule —2,000,000 such units existing in the human kidney. The glomerulus is so constructed that it should serve as a simple filter. The epithelial cells in the tubules are of a type "consonant histologically with either secretion or absorption or both." The vascular system should be considered as a definite unit capable of local reactionary changes. Its structure within the glomerulus bears important relationship to glomerular pressure and urinary formation.

The kidney is supplied by both the vagus and splanchnic nerves which innervate chiefly the blood vessels. Our definite knowledge is concerned with the vasoconstrictor fibers that reach the kidney through the splanchnic nerves. There is no reliable evidence to show that either the vagi or splanchnics supply secretory fibers to the kidney.

Theories on Urinary Production.—Now to take up one of the most interesting as well as important studies in regard to the kidney, namely, the production of urine. Numerous theories have been advanced to support as many different views on this subject. Two schools have resulted thereform:—(1) the vitalists (secretory theory), and (2) the mechanists (mechanical theory). Experimental work in support of both is abundant, but it seems that the evidence produced by the mechanists is more logical even though not conclusive because of slight conflicting experimental data.

In 1842, Bowman, basing his deductions mainly on anatomical structure, advanced the secretion theory. He believed that water was secreted from the glomeruli, and uriniferous products from the tubules. The secretion of water was "to aid in the separation and solution of tubal products."

Ludwig's excretion theory was advanced in 1844. He held that Bowman's capsule was a simple filter which permitted the passage of all the crystalloids of the plasma together with water by physical osmotic pressure. In the tubules water and some solids are reabsorbed by diffusion.

In 1874, we obtained Heidenhain's modification of Bowman's theory. Not only water was secreted from the glomeruli, but also chlorides, urea, uric acid, dye, and other products were added by tubal secretion.

Cushny's theory, evolved in 1917, is known as the "modern theory." It includes mechani-

cal filtration by the glomerulus and vital reabsorption by the tubule. He believed that useful substances as well as waste products are filtered by the glomeruli, but that the former are reabsorbed by the tubules.

Starling and Verney's work, in 1924, supports the filtration-reabsorption theory of Cushny, but adds also tubular secretion as well.

Richards and Wearn (1924) made observations on the frog's kidneys, which is of utmost importance. They have been able to collect glomerular urine by the introduction of a capillary pipette into Bowman's capsule. Analysis showed this urine to contain urea, sugar, and salt in approximately the same concentration as found in the blood. Bladder urine, however, collected at the same time showed no sugar or salt. This work would seem to be final proof that filtration occurs in the glomeruli and reabsorption in the tubules. Richards and his collaborators have performed other works of significance to urinary formation. They made direct microscopical observations of the frog's kidney and found that the glomeruli operate intermittently. "During diuresis, many glomeruli are open, that is, the capillaries carry a rapid stream of blood, and, when urine formation is depressed, few glomeruli are actually in circuit." The reaction is analogous to the behavior of capillaries in other parts of the body.

A careful consideration of the above theories would lead one to accept in a broad-minded way, that mechanical filtration occurs in the glomeruli, while either reabsorption alone or reabsorption plus active secretion takes place in the tubules.

Control of the Acid-Base Equilibrium.—One of the most important functions of the kidney is its control or maintenance of the normal hydrogen-ion concentration of the body. Since the acid end-products of metabolism constantly take up the alkali from the tissues, there is a tendency to disturb the acid-base equilibrium. That the kidney is efficient in checking this may be realized, for, normally, it may excrete 60 to 70 c.c. of normal acid daily. The strong acids are excreted largely as salts as they occur in the blood. It also saves the alkali for the body by its effect on the phosphates and by substituting ammonia as an alkali in the urine instead of the more stable bases. The alkali thus formed is available for reabsorption by the tubules for the body need. Aiding the kidney in maintaining this alkali reserve is the respiratory regulation of the blood carbonate content.

Diuretic Action.—In spite of the continued work in regard to diuretics, we are still somewhat in the dark as to the mechanism of their action. The theories of urinary formation are of importance because of their application to the action of diuretics. Substances exerting a diuretic effect on the kidney may be enumerated as follows: water, various substances such as salts, urea, and dextrose; and certain specific drugs, as caffein, digitalis; and glands of internal secretion, as the adrenal and pituitary.

Can the action of these substances be explained mechanically by their effect on the blood flow or blood pressure in the renal capillary, or must we believe that they have a specific stimulating effect on the epithelial cells of the tubules? It has been shown in regard to the saline diuretics that their effect on urinary secretion is in proportion to the osmotic pressure they exert. It has also been suggested that a condition of hydremic plethora is produced—that is, water is attracted from the tissues into the blood. Just how this excess waste is eliminated, though, revives the discussion on urinary formation. The vascular changes produced in the kidney after the administration of caffein and digitalis do not explain satisfactorily the phenomenon of diuresis. Some diuretics cause an increase in flow of urine without affecting the oxygen content of the blood, while others produce a definite increase in oxygen consumption. Now, since oxygen consumption may indicate cellular activity, this would seem to bear out the fact that some diuretics cause a genuine secretion of urine, while others bring about a production by physical means only. Another attempt to explain the action of diuretics has brought forward a "secretion threshold" for inorganic salts. Each salt is supposed to have a threshold limit, and an increase in concentration beyond this limit leads to an elimination of the excess salt with an increased amount of water. The method whereby diuresis is brought about by the glands of internal secretion is not quite understood, but it is thought that vasomotor changes are involved.

The Normal Urine

Urine is a fluid with a very complex composition. The total output within 24 hours varies from 1,000 to 1,500 c.c. When freshly

voided, normal urine is clear and transparent. Its color varies between shades of yellow. It has an aromatic odor that resembles beef broth. The normal reaction is acid. Its specific gravity varies between 1.015 and 1.025—with an average of 1.020. The important elements of normal urine are water, inorganic salts, urea, purin bodies, creatinin, hippuric acid, oxalic acid, conjugated sulphates and glycuronates, aromatic oxyacids and nitrogenous acids, fatty acids, dissolved gases, and urinary pigments. A number of additional substances occur constantly, or occasionally in traces, within the limits of health, while others enter the formation of urine with unknown composition.

References.

1. Hench, Philip S.: Practical Considerations of Renal Physiology and Function, *J. A. M. A.*, 87, July 3, 1926.
2. Jordan, H. E.: A Text-Book of Histology, 1920, p. 422.
3. Gray, Henry: Anatomy of the Human Body, 20th edition, p. 1215.
4. Howell, W. H.: A Text-Book of Physiology, 8th edition, p. 829.
5. Drinker, C. K. and Aub, J. C.: The Clinical Physiology of the Kidney.
   Nelson Loose-Leaf Living Medicine, Vol IV., p. 651.

109 *North Union Street.*

THE DIAGNOSIS OF THE VARIOUS FORMS OF NEPHRITIS.*

By L. S. EARLY, M. D., Petersburg, Va.

Member of the Petersburg Hospital Staff of the Dinwiddie County Medical Society, and of the Southside Virginia Medical Association.

The prevalence of nephritis and its association with so many other conditions as a complication, its tax in terms of suffering, economic stress and death, and its many manifestations over the whole United States would seem to make it a well worthwhile study *in extenso*. But when it comes to a "diagnosis of the various forms," the task is a fairly comprehensive one. Each of the important authorities has his own classification of the various forms. Osler[1] makes a fairly simple classification:

I. Acute diffuse nephritis
II. Chronic parenchymatous nephritis
   1. Chronic desquamative
   2. Chronic tubal
   3. Chronic diffuse with exudation

Delafield[2] has perhaps a simpler one:

1. Acute exudative
2. Acute productive

Maclean[3] recognizes:

1. Acute nephritis
2. Chronic nephritis
   Parenchymatous nephritis
   Interstitial nephritis

Others simply mention:

1. Tubular
2. Glomerular
3. Acute Interstitial

Boyd[4] calls all of them collectively the nephropathies, and divides them into three classes:

1. Nephrosis in three stages:
   (a) acute
   (b) chronic
   (c) terminal
2. Nephritides
3. Sclerosis

In the multiplicity of classifications, therefore, the only thing to do would seem to be to follow the lead of the authorities and make another. I shall divide them broadly into acute and chronic, with a word or two of the several variations as they come under these two headings.

Acute nephritis is the result of some infection which may be severe or so trivial that its presence cannot be ascertained. Osler says acute diffuse nephritis is due to the action of cold or of toxic agents upon the kidneys.[5] According to the changes wrought in the epithelial, vascular and intertubular tissues, which vary greatly in different cases, the resulting condition may be described as glomerular, interstitial and tubular. The causes of nephritis in the acute form are many and varied; but whatever the etiology, the symptoms will consist of general malaise, edema, headache, dyspnea, vomiting, pain, fever, changes in urine and blood, vascular changes and eye changes, in almost any proportion. All of the symptoms may be present, or only some.

The most important diagnostic feature will be found to be in the urinary changes[6] A simple test of the urine will show a reduced quantity and an increased specific gravity. It will be highly colored, and will contain albumin, blood and casts. A microscopical examination will reveal epithelium from the

*Read as part of the symposium on The Kidney before the Southside Virginia Medical Association in Petersburg, September 14, 1926.

1. Osler: Practice of Medicine, 7th Edition, p. 696, Seq.
2. Osler: Page 692.
3. Maclean: Modern Methods in the Diagnosis and Treatment of Renal Disease, Page 31, et. Seq.
4. Boyd: The Diagnosis and Non-Medical Treatment of Nephritis. The Clinique, 45: 289-298, 1924.
5. Osler: Practice of Medicine, Page 686.
6. Osler: Page 688.

urinary passages, hyaline, blood and epithelial tube-casts. But from the urine alone it is not safe to form a diagnosis.

The blood examination will disclose, except in the mildest cases, some accumulation of nitrogenous bodies, due to inability of the kidney to perform its normal function. The chief of these bodies are urea, uric acid, creatinin and purin bodies, comprehensively included in the term "non-protein nitrogen." The most easily estimated is urea, which is the principal reason why its concentration is generally relied on for information in nephritis investigations. The character of the casts is of some diagnostic importance; the hyaline and granular casts are common to all varieties of nephritis, whereas, the blood and epithelial, particularly those made up of leukocytes, are most common in the acute cases. In severe cases there is apt to be an entire absence of salt, a condition which changes with the improvement of the patient.

Edema is present to some extent in practically every case. In general distribution it is an indication of the severity of the case; still, the most serious involvement of the kidneys may be manifested by only a slight edema of the feet or puffiness of the eyelids. In the milder cases it may be limited to puffiness of the face on rising in the morning, or a slight edema of the feet and ankles in the evening.

A point which is apt to be overlooked is that in the acute condition the greatest danger is not in the kidney but in the heart. Every case of nephritis should be considered as a very serious cardiac affection, once it has been diagnosed. The blood pressure increase will be proportional to the amount of the edema, and returns to normal with the subsidence of the edema.

One of the latest of the diagnostic signs to be recognized in certain severe cases of acute nephritis are the eye changes,[7] which are fairly common manifestations. This discovery was made during the epidemic of nephritis in the World War, when many observers noted, as a first symptom, lesions of the fundus. Though this sign was not universally present, it was there in a large proportion of the cases, and, in an examination to determine a diagnosis of nephritis of the acute type, it should not be overlooked. The eye changes, when present, are not of serious import in the course of the disease, and of no consequence whatever in prognosis, but they may be the determining factor, when in doubt, of turning the scale in the direction of an acute nephritis diagnosis.

Coming now to the chronic type of nephritis, the subject may be roughly divided, and sharply, into parenchymatous and interstitial. Their characteristics and symptoms, and necessarily their diagnoses, are determined by their precisely opposite characteristics.

Since no satisfactory classification of chronic renal disease has ever been made, it has been deemed advisable to consider this subject, especially from the clinical standpoint, solely as it affects renal function. In this, as in acute nephritis, the process is diffuse, involving epithelial, interstitial and glomerular tissues. The extent to which the kidney functions are interfered with varies much in different cases, and, consequently, the symptoms may vary, but broadly speaking, there are two chief types of the chronic disease, one of which is characterized by a tendency to retain nitrogenous products, while the other is associated with the retention of salt.

In the first type the kidney has some difficulty in eliminating the waste products of nitrogenous metabolism; therefore, there is a tendency for an increase of these substances in the blood. This is the usual type of chronic renal disease, and, in this classification, is designated "chronic interstitial nephritis."

The other variety is a much less common type and is characterized on the part of the kidney by a failure to excrete salt. This defect is associated with marked edema and ascites and represents the condition generally referred to as "chronic parenchymatous nephritis." As its chief characteristic is an accumulation of fluid in the system, it is sometimes referred to as the hydremic type. In this type of case there appears to be no difficulty in excreting nitrogenous bodies, but the urine contains little or no sodium chloride. Consequently, the disease is always characterized by one very important symptom—edema—which may be extreme. Usually the urine contains a very large quantity of protein and numbers of casts. Although the usual renal tests are not of much value in the investigation of uncomplicated cases of this nature, no tests are really required for the reason that the great retention of fluid in the body renders the condition obvious.

By far the greater number of all cases of chronic nephritis come under the heading of

7. Maclean: Page 27.

interstitial nephritis.[8] In a majority of the cases the disease may be latent for a long time and the symptoms may not be recognized until the occurrence of one of the serious or even fatal complications. At an early stage there may be no actual increase of nitrogenous waste, but the tendency is there and, sooner or later, evidence of defective renal action is found in an increased concentration of blood-urea and other substances. This is the class of cases in which the cardiovascular system so often shows the well-known signs of degeneration. This is the type of case in which the various tests for kidney efficiency afford so much useful information. This type of case frequently terminates in the death of the patient by uremia.

Tabulating[9] the essential differences between the two types, we may note:

Interstitial	Parenchymatous.
1. Edema absent.	1. Edema present.
2. Protein usually present in the urine, but often slight or moderate in amount.	2. Protein present in urine, often in very large amount.
3. Chlorides present in normal amount.	3. Chlorides diminished or may be absent.
4. Urea concentration (urinary) decreased.	4. Urea concentration normal.
5. Tendency to increase of urea and other nitrogenous products in the blood.	5. No retention of nitrogenous products in the blood.
6. Cardio - vascular changes marked.	6. Cardio - vascular changes absent or slight.
7. Tendency to uremia.	7. Uremia less frequent.

Of the various complications which occur with nephritis may be mentioned syphilitic, scarlatinal, lymphomatous, malarial, suppurative, typhoid, and a host of other conditions, all of which are suggested by the name of the condition associated, and all of which will be diagnosed by the usual tests for nephritis, when nephritis is suspected. Indeed, it is a wise precaution to make the renal tests as a matter of accuracy.

Summarizing, the diagnosis of nephritis is to be determined by a series of tests, when the symptoms are not apparent, the tests being for albuminuria, urea concentration test, diastatic test, blood urea, blood pressure, the various dye tests, etc. The eye examination is important, while the amount of edema and dyspnea should be weighed with the case. Examination of the urine, while valuable and informative, does not always cover the several aspects of the disease.

8. Maclean: Page 29.
9. Maclean: Page 31.

POINTS ABOUT ROENTGEN EXAMINATIONS OF THE URINARY TRACT THAT INTEREST THE REFERRING PHYSICIAN.*

By WRIGHT CLARKSON, M. D., Petersburg, Va.

Medical literature clearly exhibits the value of roentgen examinations of the urinary tract, but few writers attempt to correlate the cardinal points of interest to the physicians referring these cases for diagnosis.

These gentlemen are interested chiefly in how to prepare their patients for the examination, what pathological conditions can be diagnosed by means of the roentgen ray, and what dependence can be placed in such diagnosis. In order to understand these things, it is essential to know the various pitfalls encountered in this field, and every roentgenologist should endeavor to reproduce in writing a clear mental picture of the important details demonstrated on the films, followed by his impression of the findings, and not merely record a diagnosis on his report sheet.

Preparation of the patient may be contraindicated in acute abdominal conditions, and here an examination in the presence of a distended colon is better than none, but in all other examinations requiring the passage of roentgen rays through the abdomen the patient should be properly prepared.

Roentgenologists vary widely as to the preparation, but the aim of all of them is to obtain radiographs rich in detail and contrast and free from shadows of gas and feces. Any of the various methods that will accomplish this will be satisfactory.

Strong cathartics cause active, prolonged peristalsis, thus producing smears rather than clear roentgenograms, and later the over-stimulation is followed by a relaxation of the muscular coats of the intestines and gas accumulation.

An enema before the examination is beneficial, but a short time should be given for the peristalsis to quiet down.

When practicable, the examination should not be made for about twelve hours after the ingestion of solid food.

I find no disadvantage in giving a little black coffee one or more hours before the examination and it often adds much to the comfort of the patient.

The best results may be obtained by giving from one to three drams of compound licorice

*Read as part of symposium on The Kidney, before the ninety-first session of the Southside Virginia Medical Association in Petersburg, September 14, 1926.

powder[1] every night for three nights, and an enema on the morning following the last dose, about one hour before the examination. The diet should be simple during the three days and no food should be taken on the day of the examination until the films have been made.

Usually, time will not permit of so extensive a preparation, and if a large dose of mineral oil[2] or several drams of compound licorice powder are given the night before, followed by an enema about one hour before the examination and no breakfast, the examination will be entirely satisfactory. In fact, if the patient is given a mild laxative of any kind the night before, with an enema in the morning and no breakfast, the roentgenograms are usually good.

When the patient is well prepared and proper technique is used in making the examination, the films should show the size and shape of the kidneys without the aid of the cystoscope. Thus, we may often detect a tumor of the kidney, malformation of the kidney, unilateral kidney and urinary calculus, and even be led to suspect chronic interstitial nephritis,[3] by demonstrating large symmetrically enlarged kidneys, but where time will permit, it is best to make examinations of the urinary tract as complete as possible.

Often in very acute abdominal conditions where the surgeon believes immediate operation imperative, we are requested to fi m only the urinary tract for the presence or absence of urinary calculi. In these cases, if we can demonstrate kidneys of normal size and stereoscopic films show no calculi, we have at least considerable evidence against urinary stone as a cause of the colic; yet a stricture of the ureter can cause just as much pain as a stone, and very little additional time is necessary to pass a catheter up the ureters and thus rule out a host of other conditions that could be responsible. The roentgenologist should particularly advise this if one kidney is found to be noticeably larger than that of the opposite side or irregular in contour, and in all cases where he is unable to demonstrate clearly the normal outline of both kidneys; for such failure is suggestive of kidney or perirenal pathology,[4] or may be due to congenital absence of one kidney.

Brown[5] has so perfected his technique as to question the necessity for a pyelogram in the diagnosis of certain cases of kidney tumor, reporting four cases correctly diagnosed from the flat films alone, and while the roentgenologist cannot aim too high in his efforts to perfect his technique and interpretation, all realize the need of close cooperation with the urologist. By combined effort of the roentgenologist, urologist, and laboratory, we can today demonstrate correctly practically all pathological conditions of the urinary system, but this often requires a careful analysis of all the evidence and I hope to outline briefly the difficulties which we frequently encounter.

A very small percentage of urinary stones, composed almost entirely of uric acid, urates, xanthin or cystin, cast practically no shadow upon the film, thus demanding a pyelogram with media of proper density to demonstrate their presence. They may then be shown displacing the solution injected. Such filling defects must be differentiated from blood clots and small pedunculated growths.

Shadows of urinary calculi must be differentiated from calcified areas in the bony pelvis, prostatic calculi, calcified mesenteric glands, phleboliths, enteroliths, gall-stones, calcified deposits in lower ribs or transverse processes of the vertebrae, and small pedunculated growths upon the skin. The diagnosis may rarely be complicated by calcification in any tissue of the body, including the wall of the ureter, or by calcified hydatid cysts of the kidney, as reported by Minet.[6]

It may be necessary to take stereoscopic films or flat films from various directions with ureteral catheters in place, or to give tetraiodophenolphthalein to visualize the gall-bladder, or to outline the gastro-intestinal tract by barium administration; but by careful analysis all of these conditions can be ruled out, almost without exception.

Rarely a small stone will lodge in the ureter opposite the level of the bony pelvis or in a ureter located far from its normal course. Stereoscopic films with ureteral catheters in place will usually demonstrate these.

Postoperative radiographs of the kidneys

1. B. R. Kirklin, The Roentgenological Study of the Pathological Gall-Bladder, Amer. Jour. Roent., IX, 713, Nov., 1922.

2. P. F. Butler, Pyelitis in Pregnancy, Amer. Jour. Roent., XV, 144, Feb., 1926.

3. Braasch and Carman, The Pyelographic and Roentgenologic Diagnosis of Renal Tumors, Radiology, IV, 445, June, 1925.

4. Keith T. Meyer, The Roentgen-Ray Diagnosis of Renal Tumors, Radiology, V, 416, Nov., 1925.

5. Mark Brown, X-Ray Diagnosis of Kidney Tumors, Calif. and West. Med., 1435, Nov., 1925.

6. H. Minet, Calcified Hydatid Cysts of the Kidney, J. d'urol. med. et chir., 12, p. 13.

have demonstrated clearly that a large percentage of supposed recurrent stones of the kidney are in reality due to incomplete removal, and it is best to take a film of the kidney during the operation to demonstrate complete removal of stones.

Papilloma of the kidney and ureter are very rare. They should be suspected in cases of papilloma of the bladder with profuse hemorrhage from the kidney, particularly if painless, with no calculi, and in a kidney of normal size. A pyelogram together with the history is essential, and with every possible aid we are likely to confuse them with non-opaque stones or blood clots.

In regard to renal tumors, Meyer[4] states the following: "Prior to the advent of the cystoscope and the roentgen ray, clinical recognition of these tumors was unusual. Gurlt, in 1880, reviewing 14,630 cases of malignancy from Vienna hospitals, found only sixteen clinically recognized tumors." According to Braasch and Carman,[3] "The more common new growths include hypernephroma, adenoma, fibroma and primary or secondary carcinoma and sarcoma. Among the rare neoplasms are lipoma, hemangioma, fibromyoma, rhabdomyoma and other fixed forms." They demonstrate that we can often determine the kind of tumor from the pyelogram, but since the vast majority of neoplasms found in the kidney are malignant, early recognition of renal tumor is the all imperative motive and can usually be accomplished.

A solitary cyst cannot often be differentiated from a renal neoplasm.

Calcification and tuberculosis of the kidney are often associated, and finding definite evidence of renal stone should not overshadow the possibility of tuberculosis.

Tuberculosis of the kidney can usually be diagnosed correctly, but like many other conditions here described, this diagnosis requires a careful correlation of all the evidence.

Abnormal mobility of the kidneys can be clearly demonstrated if a pyelogram is made and films taken in various positions while ureteral catheters are in place. This condition must be differentiated from a congenitally misplaced kidney, which diagnosis is usually simple. In this connection, it is interesting to note that Spitzer and Childs[7] in 1913 demonstrated that the normal kidney movement varies from three-quarters of an inch to one and one-half inches during normal respiration.

Kinks of the ureter and strictured ureters may be clearly demonstrated, but, in the former, care must be taken to prove that they are true kinks,[8] and it is unwise to give a positive diagnosis of ureteral obstruction from any cause unless there is some dilatation above the supposed area of obstruction. Often, comparison with the ureter of the opposite side will help in these cases, but we must not lose sight of the fact established by Hunner[9] that strictures of the ureter are usually bilateral.

Congenital solitary kidney should be suspected by absence of the normal shadow, and the condition can be proved by cooperative work with the urologist. Polycystic kidneys, renal rotation, horseshoe kidney, sigmoid kidney, congenital hypoplasia, duplex kidney and other anomalies are likely to be overlooked, unless the possibility of such conditions is kept constantly in mind, but proper technique will demonstrate them.

The pyelogram will outline the ureter, the kidney pelvis, and the major and minor calices of the kidney; thus, through cooperation with the urologist we can easily detect pyonephrosis, hydronephrosis, pyelitis and abnormalities of the ureter, including ureteral fistula.[10]

The diagnosis of pathological conditions of the urinary bladder, ureteral orifices and urethra, with few exceptions, may be made by the urologist alone, but in the presence of hemorrhage sufficient to interfere with the proper use of the cystoscope, roentgenograms are of great aid. We can render considerable service in stones of the bladder, particularly if encysted, in diverticula, and in tumors of the bladder. Young[11] also reports considerable information obtained from the roentgen study of cases of incontinence of urine and valves of the posterior urethra in children.

In speaking of the value of roentgenology and urology, Owsley Grant[12] says: "The combination of these two groups is dealing with the most exact form of diagnosis at present achievable in any branch of medicine." Sur-

7. Childs and Spitzer, Discussion of Shadows in the Urinary Tract, Radiology, VI, 485, June, 1926.

8. Lewis Gregory Cole, X-Ray Kinks or Angulations of Ureters That Are Not Kinks, Am. Jour. Surg., Elmira, N. Y., XXXIX, 107, May, 1925.

9. G. L. Hunner, Radiographic Evidence of Association of Ureteral Stricture and Urinary Calculi, J. Urol., Balt., XIII, 497, May, 1925.

10. A. Lichtenberg, Visualization of Ureteral Fistula by the X-Rays, Ztschr. F. Urol. Chir., VII, Hft. 1-3.

11. Hugh H. Young, The Interdependence of Urology and Roentgenology, Amer. Jour. Roent., XIV, 291, Oct., 1925.

12. Owsley Grant, Shadows in the Urinary Tract, from a Practical Urological View, Radiology, VI, 481, June, 1926.

geons at large recognize its worth, and we shall, therefore, have fewer patients returning with the same pain following operation for its relief, as has so often happened, particularly in cases of supposed chronic appendicitis, that in reality were suffering from stricture or other types of obstruction in the ureter.

205 *South Sycamore Street.*

TREATMENT OF NEPHRITIS.*

By WILLIAM C. POWELL, M. D., Petersburg, Va.
Member of Staff of Petersburg Hospital.

The treatment of nephritis depends upon the type that we have in hand, and for practical purposes may be divided into acute and chronic nephritis. Chronic nephritis may be subdivided into chronic parenchymatous nephritis, and chronic interstitial nephritis.

The treatment may also be divided into dietetic, hygienic, medical, and surgical.

In the acute form the patient should be put to bed, and there remain until all traces of the disease have disappeared.

The diet should consist of milk, or buttermilk, gruels, oat-meal, beef tea and chicken broth. It is better, if possible, to confine the patient strictly to a milk diet. As convalescence is established, bread and butter, the green vegetables, oranges and other fruits may be given. Meats should be taken sparingly. As there is a marked retention of chlorides, which seem to bear a relation to the dropsy, salt should be withheld, or reduced to the minimum.

The patient should drink freely of alkaline mineral water, ordinary water or lemonade. The fluids keep the kidneys flushed, and wash out the debris from the tubes.

No remedies, so far as known, control directly the changes which are going on in the kidneys.

The indications are: (1) To give the excretory function of the kidneys rest by utilizing the skin and the bowels, in the hope that the natural processes may be sufficient to effect a cure; and (2) to meet the symptoms as they arise.

At the onset, when there is pain in the back, or haematuria, dry or wet cups give relief. In cases which set in with suppression of urine, these measures should be adopted, and, in addition, the hot bath, with subsequent copious diluents and a free purge.

Dropsy is best treated by the hot bath, the wet pack, or the hot-air bath. The sweating produced by these measures is usually profuse, rarely exhausting, and, in the majority of cases, the dropsy can in this way be relieved. There are some cases, however, in which the skin does not respond to the baths, and if the symptoms are serious, particularly if uremia supervenes, jaborandi, or pilocarpine, may be used.

The bowels should be kept open by a morning saline purge, the sulphate of magnesia being the one of choice. The compound jalap powder, or elaterium may be used. If the dropsy is not extreme, the urine not very concentrated, and uremic symptoms are not present, the bowels should be kept loose without active purgation.

If these measures fail to reduce the dropsy, and it has become extreme, the skin may be punctured with a lancet and drained. If ascites is present, it may require paracentesis and the fluid withdrawn.

If uremic convulsions occur, and they can not be controlled by the bromides and chloral, or chloroform, we may use morphine sulphate in gr. ¼ to ½ doses hypodermically, repeated as the case requires, or if the arterial tension is high, venesection, and from 16 to 20 ounces of blood withdrawn.

Diuretics are perhaps the first means thought of by most practitioners in the treatment of nephritis. They are indicated where there is dropsy, or scanty urine. The diuretics most effective in my experience have been spirits of nitrous ether, acetate or citrate of potassium, and digitalis. This latter should be the freshly made tincture or the infusion of digitalis.

The diuretic action of the calcium salts has been known for a long time. Wright, Netter, Renon and others have treated cases of nephritis with calcium chloride, but the results were mediocre because they did not adhere to a proper diet, and because they did not give sufficiently large doses. Recent researches of L. Blum have shown that this drug is really very efficacious, but that it is absolutely necessary to observe a diet poor in chlorides and water. This treatment is based on the following facts: calcium lactate in contact with the gastric hydrochloric acid is decomposed, resulting in the formation of calcium chloride and in setting free lactic acid. Thus, the calcium ion replaces the sodium ion in the body

*Read as part of the symposium on The Kidney before the Southside Virginia Medical Association, in Petersburg, September 14, 1926.

fluids. This results in a copious elimination of sodium chloride through the urine.

A chloride-free diet is necessary because sodium chloride plays an essential part in the production of edema, and exudates, in nephritis. Calcium lactate is given in large doses of from 15 to 20 grams per day. (Medical Interpreter, No. 1).

The treatment of chronic parenchymatous nephritis is essentially the same as acute Bright's disease; milk, or buttermilk should constitute for a time the chief article of diet. Later, more food may be allowed—oysters, fresh vegetables, and fruit. The dropsy should be treated by hot baths, and salt free diet. Iron preparations should be given when there is anemia. The acetate of potash, digitalis, and diuretin are useful in increasing the flow of urine. Basham's mixture given in plenty of water will be found beneficial.

Patients with chronic interstitial nephritis should so regulate their lives as to throw the least possible strain upon the heart, arteries, and kidneys. A quiet life, without mental worry, with gentle but not excessive exercise, and residence in an equable climate should be recommended. In addition they should be told to keep the bowels regular, the skin active by a daily tepid bath, with friction; and the urinary secretion should be kept free by drinking daily a definite amount of water, either plain or mineral water, Buffalo Lithia No. 2, in the writer's experience, being one of the best. Alcohol should be strictly prohibited. Tea and coffee are allowable. The diet should be light and nourishing, and the patient should be warned not to eat excessively, and not to eat meat more than once a day.

It is to be remembered that a certain increase of tension is not only necessary, but unavoidable, in chronic Bright's disease; and probably the most serious danger is in too great lowering of the blood tension. The happy medium must be sought between such heightened tension as throws a serious strain upon the heart, and risks rupture of the vessels, and the low tension which, under these circumstances, is specially liable to be associated with serous effusions. In cases with persistent high tension, the diet should be light, and Epsom salts should be given in large doses, 1 ounce each morning or every other morning. Nitroglycerin and the nitrites also should be given until we get the physiological effect. As much as 10 minims of a 1 per cent solution of spirits of glonoin may be given three times daily. If the dose is excessive the patient will complain of flushing or headache. It may be kept up for six or seven weeks, then stopped for a week and resumed. Its value is seen not only in the reduction of the tension, but also in the striking manner in which it relieves the headache, dizziness, and dyspnoea. Sodium nitrite may be given in doses of three to five grains t. i. d.

More or less anemia is present in advanced cases, and is best met by the use of iron, the tincture of the perchloride of iron in large doses—from half to a drachm three times daily—proving helpful.

Many patients with Bright's disease present themselves for treatment with signs of cardiac dilatation; there is a gallop rhythm, or the heart sounds have a foetal character; the breath is short; the urine scanty, and highly albuminous; and there are signs of local dropsy. In these cases the treatment should be directed to the heart. A morning dose of salts or calomel may be given and digitalis in large doses—minims twenty to sixty—three times daily. Strychnine may be used with benefit in this condition. If the patient is unconscious, glucose and soda, one pint of 5 per cent solution, may be given per rectum every 6 or 8 hours by the drip method, alternating with caffeine-sodium-benzoate grs. 7½. In some instances, other cardiac tonics may be given, but as a rule, digitalis acts promptly and well.

A newer product, "Digifortis," made by P. D. & Co., has recently come on the market. This has the advantage of being put up in 1 ounce amber colored bottles from which the air has been displaced, and the date of manufacture placed upon the label. This preparation, as the name implies, is double strength of the tincture, and is well adapted for hypodermic use.

A perusal of the literature shows a distinct tendency toward the testing of renal efficiency by a study of the blood chemistry, especially of waste nitrogenous products.

An examination of the blood chemistry gives values that bear directly on the patient's condition, and it is at once known if deleterious products are being retained in the blood stream. The urea nitrogen, creatinine, and uric acid are the important products to study. Uremia is the result of excess of these nitrogenous products,

and if the blood chemistry be regularly tested, the occurrence of uremia can be anticipated.

In connection with this subject, G. E. Brown and coadjutors in the Mayo Clinic show that the pathognomonic changes in the chemistry of the blood, due to decreased kidney function, may be observed as the result of anatomic and physiologic stasis in the duodenum which brings about duodenal toxemia. In these cases the urine shows albuminuria and casts, renal insufficiency, and high values of urea and creatinine.

It is now well known that the acute nephritis caused by ingestion of a large quantity of a toxic agent may be followed by a chronic nephritis. In a similar way, W. D. Sansom and coadjutors think that many diets contain far too large a proportion of acid foods. The excessive acid is secreted by the kidneys in the form of abnormally acid urine.

There is but little in the literature that adds to the known medical treatment of nephritis. Sansom, already alluded to, finds that, by the use of "basic" or alkali producing diets, the urine may easily be reduced to normal acidity. Under such conditions, patients afflicted with arterial hypertension and chronic interstitial nephritis appear to improve, as evidenced by a fall in blood pressure, and by a reduction of urinary casts and albumen.

In the surgical treatment, which is still in a more or less experimental stage, the most important contribution is that of T. Rovsing (*Bruxelles Med.*, 1 March, 1922, 11, No. 29). Rovsing thinks that the possible dangers of nephrotomy may be obviated by the operation which he calls nephrolysis. Rovsing makes a small lumbar incision, detaches any adhesions between the fibrous capsule and the surrounding tissue, and draws the kidney into the incision; a buttonhole is made in the capsule on the convex edge of the kidney, and a cannulated sound introduced, which splits the capsule from one end to the other. If the capsule is much altered it is removed. A small fragment of kidney tissue may be removed for histologic examination.

BIBLIOGRAPHY.

Osler: Seventh Edition.
Tyson: Practice of Medicine.
Gould and Pyle: Cyclopedia of Medicine and Surgery. Fourth Edition.
The Medical Interpreter, Nos. 1-2.

17 *North Union Street.*

THE TREATMENT OF WHOOPING COUGH WITH INTRAMUSCULAR INJECTIONS OF ETHER.*

By SAMUEL NEWMAN, M. D., Danville, Va.

The treatment of whooping cough is by no means in a satisfactory state. Smith,[1] in a review of the literature on whooping cough from 1919 to 1924, divided the severeal hundred articles on treatment into five main groups. These groups consist, first, of a varied assortment of drugs used systemically; second, of local applications of various drugs to the nasopharynx and larynx; third, of intramuscular injections of ether; fourth, vaccine therapy, and, finally, the fifth group, the various forms of physiotherapy, including the use of diathermy, the ultraviolet ray and the roentgen ray.

In this paper I wish to state briefly some facts concerning the method of treating whooping cough with intramuscular injections of ether.

Audrain,[2] in 1914, first introduced the treatment of whooping cough by intramuscular injections of ether. In 1920 he reports further work by this method. The war interrupted further work along this line, but in 1919 this method had been spreading very rapidly in the clinics of the Latin countries. American and British workers took up this method about the latter part of 1923.

Mason[3] reports the results of intramuscular injection of ether in 26 cases. Eleven patients stopped coughing after the eighth injection, six were improved, and four showed no change. Four patients were given the ether combined with olive oil rectally every six hours. Two of these stopped coughing promptly and the other two showed no change.

Tow[4] used this method on all patients with whooping cough seen at the outpatient department at the City Hospital, New York, from July to December, 1924. His study embraced sixty-one well-observed cases, and he came to the following conclusions:

1. Eighty-two per cent suffering from whooping cough were aided by the use of the treatment. The ages of the patients varied from 20 days to 7 years. The number of paroxysms was reduced and their severity lessened; the patients slept better; their appetites improved, and vomiting was also lessened.

2. Eight per cent of the cases were not aided.

*Read before the South Piedmont Medical Society, South Boston, Va., November, 1926.

3. Nine per cent of the total number had necrotic areas at the site of injection.

Drake[5] reports several cases of whooping cough treated with this method, followed by very good results. Vomiting ceased after one or two injections. Serious complications were aborted, and in cases seen late, with bronchitis and broncho-pneumonia, the affection was aborted in a few days.

Goldbloom[6] records his experience with this method in eighteen cases. What might be called a cure resulted in three cases. Definite improvement occurred in ten children, and slight improvement in two, making a total of fifteen out of eighteen cases, or 83.3 per cent, in which improvement was seen. The same author reports another series of twenty-one cases treated by ether and olive oil by rectum with good results.

Pollock[7] reports the results of the ether treatment of 107 cases of pertussis. Fifty per cent showed marked improvement after the second injection, or within three days; 20 per cent after the third injection, or in four or five days; 20 per cent required four injections to control the paroxysms, and 10 per cent required from five to seven injections. The amount injected varied with the age and weight of the patient, the severity of the disease and the results obtained by the first injection. The amount given at one injection varied from 0.5 to 2 c.c.

Elgood[8] says that drugs still hold their place in the treatment of whooping cough. Ether will check the disease completely in 25 per cent, fail completely in 25 per cent, and be followed by considerable improvement in 50 per cent. The method of administration seems to be of no importance, provided the dose is large enough. Elgood injects from 5 to 10 minims intragluteally, or 30 minims in olive oil by enema.

Costello[9] treated thirty-two cases with ether injections. Four were cured after two injections and eighteen were benefited; that is, after the sixth injection the paroxysms were less frequent and the coughing less violent. Ten apparently ran the normal course of the disease, and all of the thirty-two were without complications.

The above cited references presumably represent all that has been published on this subject by American workers. The references to foreign literature are quite extensive. In France, Italy, Spain and Germany this method has been used on thousands of children. I shall refer briefly to an abstract of an article in a Spanish medical journal by Guinea[10]:

The author reports 302 cases of pertussis treated by the injection of ether. Of this series 250 (83 per cent) were definitely cured; thirty-five were much improved, and seventeen were not relieved. Complications, such as broncho-pneumonia, seemed to be infrequent under this form of treatment. The injections were generally given on alternate days, but in cases of great severity or those complicated by broncho-pneumonia, daily injections were given, and in infants over one year old the dose ranged from 3 to 5 c.c.

Before reporting the results of treatment of whooping cough with intramuscular injections of ether in nine of my own cases, it might be well to review briefly the outstanding clinical features of whooping cough.

The clinical course of whooping cough is traditionally divided into three stages, though not sharply defined, yet fairly characteristic in well-marked cases. After the incubation period we distinguish—

1. The prodromal stage (stadium catarrhale).
2. The convulsive or spastic stage.
3. The convalescent stage (stadium decrementi).

After the infection with whooping cough there is a symptomless incubation period ranging between seven and fourteen days. After the incubation period, the catarrhal stage sets in. There may be fever, rhinitis, laryngitis, bronchitis, and in rare cases pseudo-croup and frequent attacks of cough. There is nothing characteristic about this stage and may justly be mistaken—as it mostly is—for an attack of grippe and even measles.

Gradually, with increasing attacks of cough, the catarrhal stage merges into the spastic stage. The catarrhal stage lasts anywhere from one to two weeks; the convulsive stage, two to six weeks; the declining stage two to four weeks.

All the nine cases reported here were seen either at the beginning or at the height of the spastic stage. Only such cases were selected for report where complete observation was possible.

Remarks

Case 1 was extraordinarily severe and undoubtedly belonged to the very severe and

Case No.	Serial No.	Stage of Disease	Duration of Spastic Stage when First Seen	Age	Frequency of Paroxysm (Not Less Than)	No. of Injections	No. of days over Which Given	Amount Per Dose	Result
1	287	Spastic	18 Days	14 Mo.	12 a Day	3	3	2 cc.	Cured
2	322	Spastic	?	7 Yrs.	18 a Day	3	10	1 cc.	Improved
3	1469	Spastic	12 Days	5 Mo.	18 a Day	5	11	1 cc.	Cured
4	1119	Spastic	5 Days	13 Mo.	24 a Day	4	8	1 cc.	Cured
5	1470	Spastic	14 Days	21 Mo.	18 a Day	1	1	1 cc.	Cured
6	1471	Spastic	Beginning	4 Mo.	9 a Day	4	7	1 cc.	Improv'd
7	1472	Spastic	14 Days	6 Yrs.	12 a Day	3	5	3 cc.	Improv'd
8	1501	Spastic	10 Days	13 Mo.	9 a Day	2	5	1 cc.	Improv'd
9	1502	Spastic	10 Days	15 Mo.	12 a Day	1	1	2½ cc.	Improv'd

rapidly fatal cases described by Finkelstein[11] as usually landing into "status eclampticus," coma, and death. After three injections, the improvement was spectacular.

Case 2 was accompanied with considerable hemorrhagic sputum. The bleeding was quite profuse and fresh with each paroxysm, indicating bleeding from large capillaries. It was felt that unless the paroxysms were mitigated the danger of considerable hemorrhage and perhaps rupture of a meningeal vessel was imminent.

Case 3 was a bottle-fed infant, during the hot month of July, in a moderate condition of hyponutrition. The infant was losing weight; because of vomiting, the danger of dehydration was very great. The infant improved immediately after the first injection. After the fifth injection, the weight curve showed a marked upward rise.

Case 4 was a premature infant with a birth weight of 5 pounds. Throughout its development it manifested a constitutional inferiority or *debilitas vitae*, as evidenced by prematurity, loose skin, slow mental and physical development. The infant showed great susceptibility to upper and lower respiratory affections and, in spite of continuous cod-liver oil and ultraviolet treatments, it developed rachitis. During the catarrhal and the early spastic stage, the weight line showed a slight decline. Soon after the first inpection and during the other three injections the weight line showed a very sharp rise.

Cases 1, 2, 5, *and* 9 showed necrotic areas at point of injection. Case 5 showed only a very small and very superficial area of necrosis which healed in ten days. Case 9 showed an area about the size of a silver dollar—the largest area of necrosis occurring in my cases. The patient was my own child, and the fault in technique consisted in the use of double the amount of ether indicated for a child of that age.

Conclusions

1. Intramuscular injections of ether have proved an effective means of mitigating and curing a considerable proportion of cases of whooping cough.

2. The method is being used extensively abroad and moderately so in this country.

3. In the hands of the writer, the method has proved effective in several cases, and life-saving in at least one case characterized by "status eclampticus."

4. In using this method, the possibility of a limited and sharply circumscribed area of necrosis must be counted with, but in special cases the general benefits of the treatment far outweigh the local complication.

References.

1. Smith, L. W.: A Review of the Literature on Whooping Cough from 1919 to 1924. *A. J. Dis. Children.* Vol. 28, Dec., 1922.
2. *Ibid.*
3. Mason, C. C.: Treatment of Pertussis with Intramuscular Injections of Ether, *Arch. of Ped.*, June, 1924.
4. Tow, Abraham: Intramuscular Use of Ether in Pertussis, *A. J. Dis. Child.*, April, 1925.
5. Drake, W. F.: Ab. *J. A. M. A.*, Vol. 82, p. 1818, 1924.
6. Goldbloom, Alton: The Use of Ether in Pertussis by Intramuscular and Rectal Injection. *J. A. M. A.*, Vol. 85, p. 1791, 1925.

7. Pollock, J. E.: Ab. *J. A. M. A.*, Vol. 86, p. 652, 1926.
8. Elgood, E.: Ab. *J. A. M. A.*, Vol. 85, p. 70, 1925.
9. Costello, J. P.: Ab. *J. A. M. A.*, Vol. 84, p. 127, 1925.
10. Guinea, R. G.: Ab. *A. J. Dis. Child.*, Vol. 30, p. 268, 1925.
11. Finkelstein, H.: Diseases of Infants, 2nd ed., Julius Springer, Berlin.

Arcade Building.

ON THE PERCUSSION OF THE HEART.*

By JAMES W. HUNTER, JR., M. A., M. D., Norfolk, Va.

If we are willing to take the trouble to investigate the medical literature upon any one subject, we shall not find an amount more voluminous than that dealing with the human heart. If we shall then begin to reason, we must conclude that there is no subject which contains a greater amount of speculation than that, to which we have alluded. No indictment can be stronger than that of Lewis. He writes as follows: "Inexact method of observing, as I believe, is one flaw in clinical pathology today. Prematurity of conclusion is another, and follows in part from the first, though in part an unusual craving and veneration for hypothesis, which besets the minds of medical men, is responsibile. Except in those sciences which deal with the intangible, or with events of long past ages, no treatises are to be found in which hypothesis figures as it does in medical writings. The purity of a science is to be judged by the paucity of its recorded hypothesis. Hypothesis has its right place, it forms a working basis; but it is an acknowledged makeshift, and, as a final expression of opinion, it is an open confession either of failure, or at the best of purpose unaccomplished." If this be true, then it behooves us to set aside, if we can, all speculation, and, devoting ourselves to systematic study, reach an opinion for the condition noted. For, to quote the familiar maxim of Jenner, "more mistakes are made by not observing than by not knowing."

For there is no romance more pronounced than that of the heart. I doubt if the newer conception of the endocrine bodies would fill more volumes with speculation. Any clinical investigation that seems to depend upon the exclusive touch or ear of the examiner, depends in turn upon his personal equation and by so much is lacking in scientific interest. Only a well balanced mind trained in all of the arts of medicine is competent to render an opinion. He must view the subject from all angles, and by a process of deduction or induction strive to arrive at a proper conclusion. Hypothesis must be eliminated. Thus, many of the best clinicians refuse to commit themselves. As life and health are but the harmonious adjustment of internal relations to external relations, it behooves us to study these relations. But we must study internal relations through external relations. Herein lies the mystery of the art of diagnosis; herein lies the romance of the heart.

A review of the anatomy of the heart and its relations to the chest wall will not be out of place. Mackenzie, quoting from Waterson, gives perhaps the best resume. Waterson, he says, has made a number of observations of the heart as a whole and of its chambers in relation to the chest-wall by a method of projecting orthogonally the outlines of the ribs, the sternum and heart upon a flat surface. It is thus seen "that the anterior surface of the heart is of a quadrilateral shape. The whole of the right border is formed by the right auricle and the same chamber constitutes the whole of the heart, which lies on the right side of the sternum. The right ventricle constitutes the greater part of the anterior surface and lies behind the sternum and to the left, while the left margin and the apex of the heart are formed by the left ventricle. Only a very small portion of the left auricular appendix appears on the anterior surface, at the root of the pulmonary artery, and it is quite insignificant. It is quite usual to find the apex of the heart behind the sixth costal cartilage, and the lower margin of the heart is frequently found at a lower level than is usually given, namely, the lower border of the body of the sternum; and it descends behind the ensiform cartilage. The greatest vertical and transverse measurements of the projected outline of the heart measure four and a half to five inches in the adult male. Frequently, however, one of these dimensions is increased, usually the vertical, while the transverse diameter is somewhat diminished. This shape of the heart is usually associated with a long narrow chest." (Fig. 1.)

But Waterson is very quick to note a change in living anatomy from that taught at the dissecting table. "These observations," he says, "have been made on the cadaver in the hori-

*Read at the meeting of the Seaboard Medical Association of Virginia and North Carolina, at New Bern, N. C., December, 7-9, 1926.

zontal attitude, and may be taken to indicate accurately the position and shape of the heart in that condition. If these outlines are compared with the outlines taken during life in the vertical position by the orthodiagraph, it is found that there is a difference in the results obtained, indicating that the position of the heart is different. In the vertical attitude, during life, the heart lies at a lower level, and the lower border of the heart descends behind

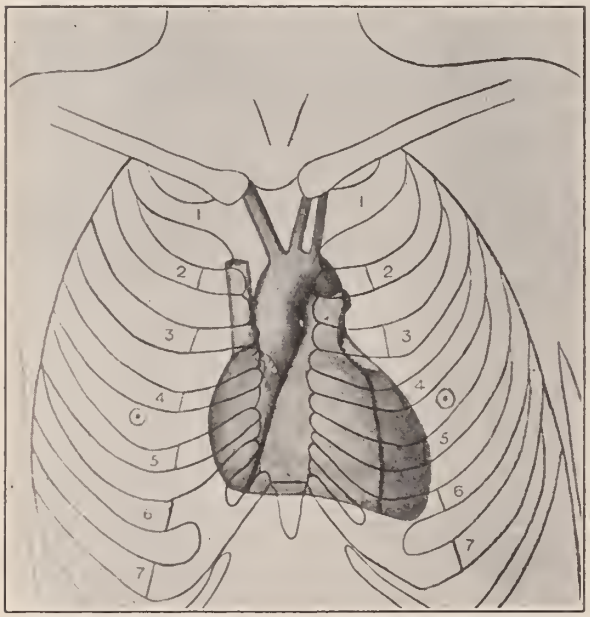


Fig. 1.—Orthogonal projection of normal heart. Showing relative position of heart and attachment of pericardium to chest wall. From Mackenzie.

the ensiform cartilage to a varying degree, and the right ventricle comes to lie behind the upper part of the abdominal wall in the infracostal angle. This descent is associated with the descent of the diaphragm which occurs in the change from the horizontal to the vertical position. It is further found that the movements of respiration affect the position of the heart very considerably, and especially the level of the lower border, which rises in expiration and sinks in inspiration. The upper border, on the other hand, is not so much altered, but the right and especially the left borders are influenced at their lower ends. The left margin was found in expiration to move to the left side to a distance of as much as one inch." (Fig. 2.)

But this is not all. We must not forget that the portion of the pericardium directly connected with the chest wall represents only a part of the actual projection of the heart upon this wall. That portion of the chest wall directly in contact with the pericardium can be approximately described as an irregular triangular area with its base downward. Beginning at the junction of the left border of the sternum and the second costal rib, the line passes irregularly downward and outward until a point almost midway between the middle line of the sternum and the left midclavicular

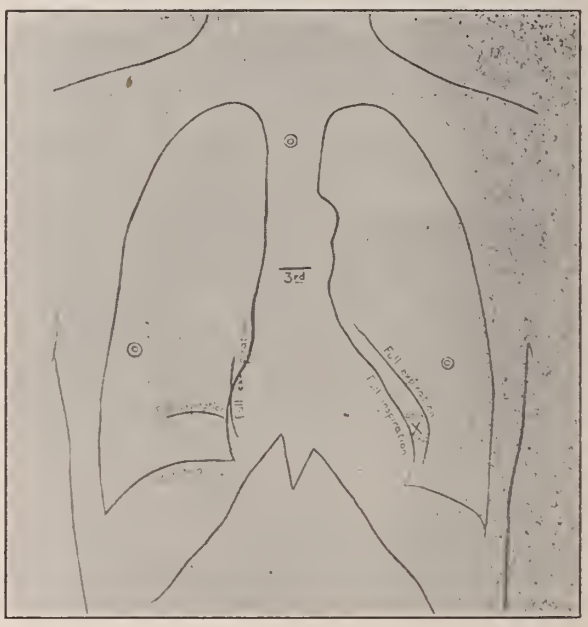


Fig. 2.—Orthodiagram of normal heart. From Mackenzie.

line at the level of the lower border of the sixth costal cartilage is reached, when it passes inwardly along the diaphragm and slightly upward to a point at the intersection of the right border of the sternum and the sixth costal cartilage, to ascend in a straight line to the point of beginning. We must also remember that the heart lies free in the pericardial sac, its only attachment being at the origin of the great vessels. Then, too, let us not forget that the anterior wall of the chest is elliptical on its cross section, while that of the heart approaches a circle. The space between the two is filled with lung tissue and is, therefore, of a different density. (Fig. 3.)

I would again refer to what has been said above. While anatomy as taught in the dissecting room is, and must forever be, the foundation of our knowledge of the human organs, the anatomy as found in the living being will vary greatly owing to the upright or other

position and the difference of expiration and inspiration. This is especially true of the heart. Yet, for our purposes the attachment of the pericardium remains in general as described. We must, however, be reminded that the general direction of the heart is upward, backward and to the right, that is, if we begin at the apex, and that the great vessels, like the portion of the heart outside of the attachment of the pericardium to the wall of the chest, are also covered with other tissues. The sternum itself is of bony material, hard and inelastic.

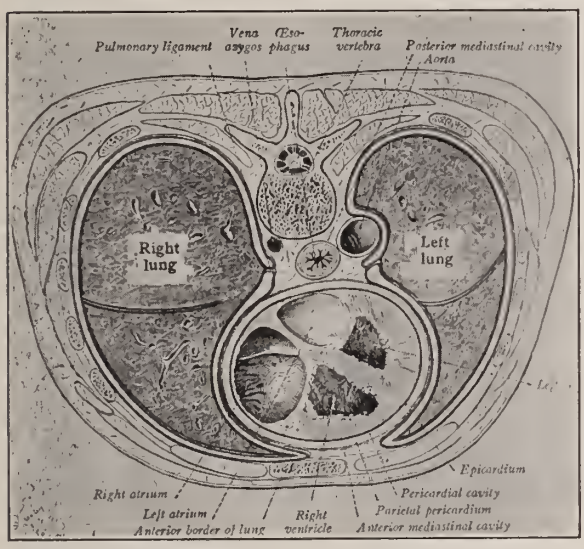


Fig. 3.—Cross section of human chest. From Sobotta.

This brings us directly to the consideration of our problem. Can the size of the heart be accurately determined? Can we determine accurately the internal relations of the heart through the use of external relations? Upon inspection, often the apex beat can be located. But, as a rule, this is about all that we can find out in the normal heart by this means. Venous pulsations in the neck, pulsations in the middle of the sternum, epigastric pulsations, a rhythmical pulsation of the lower side of the chest (Broadbent's sign), clubbed fingers, spots on the skin or cornea, an irregular pulse, cyanosis, dyspnoea, etc., can only serve to make us suspicious. It is upon these observations that the older clinicians were wont to theorize. Nor will palpation aid us much. The observations made upon inspection may only be revealed in a clearer manner. One method only serves to check the other. Likewise, auscultation. It will determine with great accuracy the position of the apex beat, as the mitral sounds are heard best here and give some clue as to what we should expect in pericardial disease, enlargement of the left ventricle, etc. But, in the main, the various murmurs heard by the stethoscope, including the rare murmur of Roger, will only serve to guard us in our studies of the size of the heart.

Of all the physical signs in the determination of the size, shape and relations of the heart, percussion is the only one upon which clinicians have relied. It is the only one that has stood the test of time. Its history is most interesting. Its discovery is attributed to Auenbrugger in 1751. To quote Garrison: "His little book is the first record of the use of mediate percussion of the chest in diagnosis, based upon observation verified by postmortem examination. Our author's first proposition is that the chest of a healthy person sounds, when struck, like a cloth covered drum. He then proceeds to utilize his special method of eliciting information by striking the chest gently with the points of the fingers brought together (stretched out straight and afterward flexed), the patient holding his breath; a muffled sound or one of higher pitch than normal indicating the presumable sign of a diseased condition." Like all great discoveries, however, this one was not accepted seriously, and it remained for Corvisart, in 1818, to call the attention of the profession to the subject and to revive it.

This was the beginning of the percussion of the chest. It was an immediate percussion, however, that Auenbrugger taught and practiced. Even today this form of percussion is of much value. Even in the outlining of the heart, we shall note a great difference in the tone and resistance as we approach the triangle of dullness. But it is to Priory that we owe the pleximeter and the first treatise on mediate percussion. His work was published in 1828. He is the father of percussion as it is now employed. Most of his followers have, nevertheless, felt that better results are to be obtained by the use of the middle finger of the right hand hitting a finger of the left hand laid directly on the chest than by the use of the hammer and pleximeter. Thus we have deep or hard percussion, light or gentle percussion, orthopercussion, in which the finger is bent with its tip resting upon the chest and the percussion stroke applied over the joint be-

tween the first and second phalanges. Each of these methods has its advocates. Each has many advantages; each of them has some disadvantages. Each clinician has his own personal equation. So that, to paraphrase a recent author, cardiac percussion is the most difficult of the diagnostic procedures that we are called upon to employ in physical diagnosis. (Pratt).

The area of attachment of the pericardial sac and the chest wall has been described in some detail. There is a layer of lung tissue between the remainder of the heart and the wall of the chest. Percussion of this area will give, consequently, a note more or less tympanitic. Many clinicians have claimed that by the adoption of a deep or heavy percussion they were able to eliminate most of the resonance of the air filled tissue, and so percuss the true area of the heart. They have called this the area of absolute cardiac dullness in contrast to that of relative dullness as brought out by a lighter stroke. In neither case will the lines as brought out by percussion represent the lines as brought out by orthogonal projection. Another inherent difficulty in percussion lies in the fact that the sternum is of bony tissue, hard and inelastic. The percussion of the right border of the heart is in general that of the percussion of the right border of the sternum. The base of the heart and the great vessels, as we have said above, lie deep. Moreover, it will be noted that the quality of the cardiac dullness is dependent upon the resistance as determined by the finger laid upon the chest, as well as by the note detected by the ear. To many there is a difference when the examiner is looking at the patient than when he is turned away. So that the best clinicians always insist upon the use of the eye as well as of the touch and ear in percussion.

In spite of these inherent difficulties, percussion represents the only means in physical diagnosis of acquiring any real knowledge of the size and position of the heart, save that the apex beat is often found on inspection and in rare conditions the sign of Broadbent. With all of its difficulties, however, much is to be learned from percussion. It will be noted that normally the apex beat should lie within the midclavicular line and at the fifth interspace. An apex that lies beyond this point, or below this point, is distinctly pathological. Again, we shall note the left side of the triangle of dullness and determine as accurately as possible the relation of this line to the dullness in the third interspace. If the line as determined by the vertex of the triangle (the junction of the left border of the sternum and the second costal cartilage), the point of dullness at the third interspace and the point of the apex, bulges externally, we may correctly assume that there is an enlargement of the left side of the heart and look for valvular disease. If this point lies within the line joining the vertex and the apex, the heart in most cases is to be considered normal. Similarly, a heart whose right border lies upon percussion outside of the right border of the sternum, is to be considered suspicious.

Every examiner has his own personal equation. No two men are apt to percuss the heart exactly on the same line. Personally, I have no preference for any kind of percussion, feeling, as I do, that we should strive to bring out the largest area of dullness. Sometimes a heavy stroke seems more suitable; often a lighter one seems better. But we may assume that in no case are we likely to percuss an area greater than that of the projection of the heart. Even the most expert will fail before the crucial test of the orthodiagraph or the postmortem table. Again, the position of the patient must be noted, whether erect, on the back, or lying on the left side; and whether in inspiration or expiration; for there are those who claim that normal dullness will be increased to the left, if the patient lies upon this side, and, failing to get these changes in the area of dullness, an adhesive pericarditis is to be suspected. Then, too, as we have seen, there is distinctly an upward limit to the normal area of dullness; lying deep, as it does, an enlargement of the arch of the aorta cannot be diagnosed by physical signs. Often indeed an aneurism will escape detection by physical signs. Thus we see that the percussion of the area of cardiac dullness is of the greatest clinical value in the determination of the size of the heart, but it is quite evident that it fails to tell the full story of the size and position of the heart.

Fortunately for us, the era of hypothesis in regard to the actual size of the heart has now been swept away. In 1895 Roentgen announced the discovery of the rays bearing his name, little dreaming of the important role that they should play in the diagnostics of in-

ternal medicine. Thanks to the porosity of the tissues of the lungs and the density of the cardiac tissues and their fluid contents, the heart can now be outlined with the greatest accuracy. To this end complicated methods have been invoked for the absolute determination of the area of the heart. Curves have been drawn, as well as complicated formulas put forward. But for practical and clinical purposes we have the methods that have given us a very excellent insight into the working of the heart. I refer, of course, to fluoroscopy (and to its more refined offshoot, orthodiagraphy), teleroentgenography and telefluoroscopy.

If we recollect the principle of the fluoroscope, that the rays of light are eliminated from a small target and pass in all directions, and that the patient stands comparatively near the source of the light, it is easy to see that the image cast upon the fluorescent screen is an exaggeration of the true condition, just as a ring may cast a shadow as of a larger ring or that of an ellipse, depending upon what portion it assumes in a cone of light. So the orthodiagraph was invented. By means of this only a very small area is shown at any one time and this is always in front of the central ray. By moving the box containing the tube about, we shall obtain only a portion of the shadow of the heart at any one time, but there will be no distortion. The shadow of the heart can now be drawn upon a piece of transparent paper. This indeed has many advantages; yet the time-consuming ordeal for the patient and the examiner, not to speak of the personal equation of the examiner and the involuntary movement of the patient, have argued against it. So that most examiners are content with the heart shadow upon the ordinary screen, or traced upon a piece of transparent paper, due care being taken to determine with accuracy the cardinal junction points of the ventricles and auricles and outlining the visible area of the great vessels. Similarly, the patient is placed in a side position and again a tracing made. With a knowledge of the normal heart as viewed upon the screen, some knowledge is gained in regard to that observed. Although it is at this time somewhat outside of our immediate subject, it is of much interest to observe the beating of the heart. Holmes upon one occasion was able to note that the auricle was beating twice as fast as the ventricle and to make a diagnosis of a two to one heart block. This later was confirmed by the tracing of the electrocardiograph.

To teleroentgenography, however, the greatest aid has been ascribed. By using a distance from target to screen of from six to seven feet (two metres), we are able to eliminate the diffraction of the roentgen rays. These are now so nearly parallel that for practical purposes the cone of light may be neglected. This gives us the measurements of the heart as nearly as they may be determined, and, although not so plainly marked as in the orthodiagraphic tracing, the junction points of the auricles and ventricles may be determined, and also the base and of the great vessels and especially the arch of the aorta. We

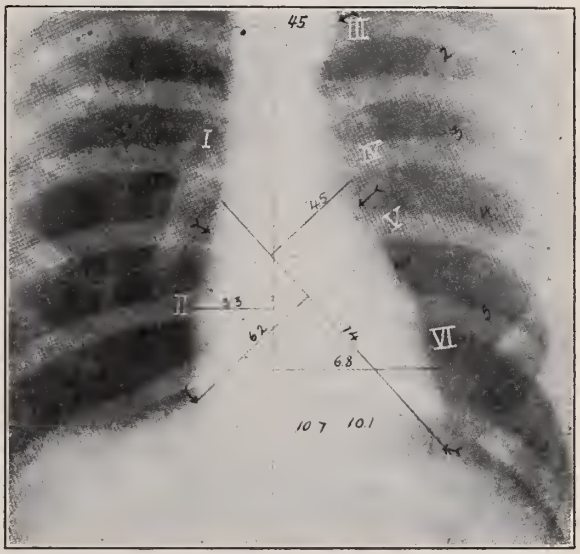


Fig. 4.—Teleroentgenogram of normal heart. From Holmes and Ruggles.

are also able to make accurate measurements of the distances of the right and left borders from the midline of the sternum as well as to determine the conjugate diameters of the heart. The effect of the atmospheric pressure upon the heart, as in the case of aviators, as well as that due to the upward pressure caused by pregnancy, may also be carefully noted. (Fig. 4.)

Recently, Pratt has brought forward the idea of telefluoroscopy. In this procedure the patient is placed at a distance of two metres from the target of the tube, and the screen placed just in front of him. The examiner takes his place before the screen. Theoretically, this procedure offers all of the advantages of the

orthodiagraph, in that the movements of respiration may be noted, the cardinal points observed, and a tracing made upon a piece of paper. Similarly, the laterial view is obtained. Through the courtesy of Dr. Pratt, I had the opportunity of observing a young professional man, who had been told by an able clinician that his heart was enlarged. Examination negated the former conclusion. This procedure, nevertheless, has many objections, the chief of which is that the room is filled with roentgen rays and that the observer has little protection. If some form of opaque bellows could be constructed, to be moved upward or downward as the cases required, a valuable instrument would be added to our armamentarium.

From the examination by the roentgen rays the most accurate determination can be made of the size and position of the heart. Enlargement can be noted. This, again, must be considered as relative. Just as in the case of percussion, we consider as abnormal an apex lying outside of the midclavicular line, just so in this case a heart, the sum of whose greatest measurements from the midvertebral line to the left and right borders exceeds one-half of that of the width of the chest-wall is to be considered abnormal. We can say, moreover, but not dogmatically, that the teleroentgenogram of such and such a heart is consistent with such and such a valvular or myocardial lesion. Yet, even this has its limitations. The cases of coronary disease show no increase or abnormality of shadow. A small increase of the size of the pericardial shadow also cannot be detected. Holmes estimates that at least 200 c.c. of excess pericardial fluid must be present before a marked abnormal change can be noted. It would be of the greatest interest also accurately to determine whether the increase in size of the cardiac shadow were in all cases due to increase of the size of the heart or to the existence of fluid. Occasionally such a diagnosis is possible, depending upon the density of the fluid; but these diagnoses are so rare that for practical purposes no specific information may be obtained either from the percussion of the heart or from the roentgen examination. The diagnosis must be made by other means.

From these observations I think that we may well conclude:

1. That the percussion of the heart is the most valuable clinical sign that we possess in regard to the determination of the size and position of the heart.

2. That the difficulties inherent to the percussion of the heart are such that reliance must not be placed too strongly in the area of dullness noted.

3. That in every suspicious case the preliminary diagnosis must be proved or disproved by a roentgenological examination.

4. That while the roentgen examination has its limitations as well as the physical signs have in the determination of the size and position of the heart, it is the most valuable procedure that we now possess.

REFERENCES.

Lewis. The Mechanism and Graphic Registration of the Heart Beat. London, 1925.
Mackenzie. Diseases of the Heart. Oxford, 1918.
Garrison. History of Medicine. Philadelphia, 1914.
Pratt and Bushnell. Physical Diagnosis of the Diseases of the Chest. Philadelphia, 1925.
Pratt, Joseph H., Personal communication.
Holmes and Ruggles. Roentgen Interpretation. Philadelphia, 1926.
Holmes, George W. Personal communication.
White, Paul D. Personal instruction.
Sobotta and McMurrick. Human Anatomy. Philadelphia, 1911.

603-606 *Medical Arts Building.*

THE INFLUENCE OF CIRCULATORY DISTURBANCES ON POST-OPERATIVE MORTALITY.*

By WM. H. HIGGINS, M. D., Richmond, Va.

When a patient enters a modern hospital for surgical treatment today, he occupies a position radically different from that of a few decades ago. He is no longer classified as a purely surgical case and treated only by members of that department but he is now the object of a group study and belongs to no particular specialty.

One of the encouraging signs of the times is an ever increasing conviction that no part of the human mechanism is independent of the whole, and certainly no surgical procedures may be safely undertaken without due consideration of this fact. There is a no more refreshing chapter in modern medicine than that which deals with the correlation of the different specialities, thus making the interest of the patient paramount.

The major question is not only the indication for surgical treatment but how far such procedures may be carried out without seriously involving the vital bodily processes.

*From the Medical Department of St. Elizabeth's Hospital, Richmond, Va.

Among these problems none is more important than those relating to the cardio-vascular system. The object of this paper is to discuss the probable influence of circulatory disturbances on the mortality statistics and convalescence of patients operated upon at St. Elizabeth's Hospital during the last three years.

In determining the operability of a patient, the efficiency of the heart is the keystone, for without a reasonable confidence in its functional ability, all other factors become secondary considerations. During the past three years we have placed special emphasis upon this point and have subjected each patient to as careful an examination as time would permit. I regret that no electrocardiographic studies have been made as they would probably have assisted us in recognizing some otherwise obscure lesions.

During this period of three years, 2,778 patients were admitted for treatment in whom 844 circulatory abnormalities were found, classified according to the Massachusetts General and Allied Hospital nomenclature. As the majority of these patients were surgical candidates, the significance of the cardio-vascular lesions in so far as it affected their operative risks was of no little moment. In many instances there was no alternative as the urgency of the operation demanded immediate attention regardless of complicating factors.

In reviewing the records of these patients, it was found that 26 of the 64 post-operative deaths showed on physical examination evidences of one or more cardio-vascular lesions. These included chronic hypertension, chronic myocarditis, aortic and mitral valvular lesions, arrhythmias, arteriosclerosis, etc. Assuming an average of two lesions in each cardiopath, the mortality rate in this group was approximately double the group of uncomplicated cases. However, so far as we could determine by limited post-mortem examinations, only 12 of this group could be directly chargeable to circulatory failure. This gives a post-operative mortality of .6 of 1 per cent resulting from cardiac complications. According to the published statistics of other hospitals, this figure represents an average mortality, although a personal communication from the Department of Cardiology at the Mayo Clinic reports the remarkably low rate of .1 of 1 per cent.

Gross or demonstrable heart lesions cannot, therefore, be considered a serious factor in raising the mortality rate of a surgical hospital. The cause of this apparent paradox is in all probability dependent upon several factors. Hospital staffs have learned to consider the patient first as a cardiopath and second as a surgical problem. Every effort is made to bring his bodily functions up to the highest possible efficiency. His renal output is studied, and if a vascular hypertension exists suitable measures are instituted to correct as far as possible this handicap. Not the least important factor contributing to a successful outcome in this type of patient is prolonged hospitalization, unless, of course, the nature of the surgical lesion demands immediate intervention. Undoubtedly the element of rest in the pre-operative cardiopath is one of the necessary requisites for reducing post-operative cardiac mortality. This fact is strikingly illustrated by statistics introduced in another paragraph which show that our surgical mortality on all types of cases decreased as the pre-operative hospitalization increased.

In Chart I, an analysis of the post-operative fatalities is given for the years of 1923 and 1924. It is so arranged that the abscissa represents the date of operation after admission and the ordinate represents the number of days in the hospital before death. The first obvious fact is that over 50 per cent of the mortality for the two years was drawn from patients who were operated upon during the first 24 hours after admission. One naturally expects a definitely higher mortality during that period because more desperate chances are taken, such as accidents, ruptured appendices, and many other fulminating processes which demand immediate treatment. Yet excluding all so-called emergency cases, there still remains an uncomfortably large group who were not considered acutely ill but who died following the first day operation. During this period there were 11 operative fatalities of this type.

This brings us to the central theme of this phase of the discussion. Patients entering the hospital may be normal physically according to the usual clinical and laboratory tests but may prove to be poor surgical risks for an immediate operation. There is in them an element lacking which is often designated as *resistance*, a term which is only vaguely understood. Not infrequently they have subjected themselves to some abnormal strain in

Day of Operation	1	2	3	4	5	6	7	8	9	10	11	12	13
Day of Death 1	xxx x												
2	00 x												
3	00												
4	0x	0	0										
5													
6		x											
7		0											
8	0					0	0						
9	x	0			0								
10													
11							0						
12	x 0												
13													
14	00 x0 0	0	00 0	0		0			00	0			
15	Et cet	era											
16													

CHART 1.

Analysis of mortality record for 1923 and 1924.
Abscissa represents day of operation after admission.
Ordinate indicates date of death after operation.

0 = chronic cases, x = acute cases.

order to make it possible for them to leave their business for hospital treatment. Men have lengthened their hours of labor and women have put their houses in order, often working up to the very moment of entering the hospital. Insomnia, fatigability, fear and other vasomotor disturbances are sometimes found in the new patient and are relieved only by the element of time. The role of the emotions is not negligible. Corvisart observed that the sorrow following great emotional disturbances may be the origin of refractory disorders of the heart, and Vaquez (Diseases of the Heart, Amer. Ed., Vaquez, 1924), writing on the causes of heart failure, states that the excessive acceleration of the heart beats caused by fear or anger imposes on the heart an excess of work just as does exertion and leads to the same symptoms. An elevated pulse rate and a slightly increased blood pressure, with or without a pulsus alternans, are not uncommon findings on admission, which usually return to normal after an adjustment to hospital routine is made. A recent attack of grip followed by spasmodic coughing spells and palpitation of the heart

associated with painful distention of the epigastrium often present themselves without objective circulatory signs but are usually of serious omen. Not infrequently periods of depression, vertigo or a sense of fulness in the cranium may be complained of, weeks or even months before definite evidences of myocardial weakness can be demonstrated. We know that vascular hypertension and decompensating hearts have no more valuable therapeutic agent than rest, and who cannot say that the symptoms above referred to are not also indirectly circulatory in origin and require the same mode of treatment? It is generally admitted and the figures in the accompanying charts (Nos. 1 and 2) indicate that such patients fare better when the operation is delayed for one or more days.

In addition to the element of rest and adjustment for borderline circulatory cases, the opportunity for selective digitalization is offered. During the last few years considerable interest has been taken in the apparent effect of pre-operative digitalization on mortality and convalescence. Geist and Somberg (Geist, S. H. and Somberg, J. S.: Pre-operative Digitalization: A Method to Reduce Post-Operative Complications, *Amer. J. Obst. & Gyn.*, 4: 135, Aug., 1922) have noted post-operative complications in only 2.9 per cent of their digitalized patients as against 26 per cent in those not digitalized. They credited this favorable result to the prevention of a post-operative fall in blood pressure. Lilienthal, (Lilienthal, H.: Resection of the Lung for Suppurative Infections, *Ann. Surg.*, 75: 257, March, 1922) states: "With or without sepsis it is the power of the heart to adapt itself which is perhaps the greatest factor in determining resistance. * * * In any event digitalization should be accomplished in the 48 hours preceding the operation." Thomas (Thomas, B. A.: Factors Responsible for Reduction of Mortality and Morbidity in Prostatectomy, *J. A. M. A.*, 82: 281, Jan. 26, 1924) likewise in a discussion of the factors responsible for mortality after prostatectomy favors complete digitalization. Recently Marvin and Carmichael (Marvin, H. M. & Carmichael, M. & Pastor, R. B.: The Electrocardiogram and Blood Pressure During Surgical Operation and Convalescence, *Arch. Int. Med.*, 34: 782, June, 1925) have studied the electrocardiographic and blood pressure records in the pre-operative digitalized and non-digitalized patients but were unable to note any favorable influence of the drug on the blood pressure or incidence of post-operative complications. In fact, they were led to believe that digitalis possibly caused rather than prevented a post-operative fall in pressure. Their studies were made on a series of 30 patients, only 10 of whom were over 50 years of age. Their conclusions would not, therefore, necessarily apply to those patients past middle life when myocardial changes are most frequent. Obviously the favorable influence of digitalis therapy cannot be determined by its ultimate effect on blood pressure. It is a well known fact that a decrease in blood pressure is no indication that digitalis has not had a beneficial result, as many hypertensive and decompensating heart cases show an improvement with a corresponding lowering of the pressure after digitalis therapy. In our experience the average fall in blood presure following an operation is no greater, except in cases of shock, than in other non-surgical patients subjected to a similar hospital routine.

During 1923 and 1924 pre-operative digitalization was used for those patients showing clinical evidences of circulatory embarrassment or definite cardiac lesions without decompensation. So long as the general physical condition was satisfactory, surgical procedures were not postponed for the purpose of rest or other medical treatment. Impressed, however, with the fact that a number of post-operative deaths had occurred following first day operations during the last two years, we decided to make a more liberal use of digitalis. Although there was no disturbance of mechanism in this group of cases, there was some reason to believe that there may have been an unrecognized myocardial weakness, which may have contributed to the unfavorable outcome.

Beginning with 1925 an effort was made to digitalize all patients over 50 years of age as well as others showing any tangible evidence of myocarditis. This necessitated a longer pre-operative stay in the hospital which in itself probably had a favorable influence on the patient's resistance. Digitalization was usually accomplished within 24 hours by the rapid Eggleston method, allowing approximately 2 mimims of a standardized tincture to each pound of body weight. In not a single instance were there any indications of digitalis poisoning or development of unfavorable

symptoms following digitalization. On the other hand there were many examples of elderly patients whose response to digitalis therapy was sufficiently striking to warrant our continuance of this policy.

In Chart 2 an analysis of the mortality record for 1925 is given. Beginning with this period an attempt was made to lessen the number of elective operations during the first 24 hours after admission. Only 2 patients of this type died following a 1st day operation as compared with 11 of the previous 2 years. The mortality following all 1st day operations was 44 per cent of the total as against 52 per cent in 1923-1924. In many of these 1st day operations, there was time for partial digitalization to be carried out.

From a study of these records, our impression is that a non-emergency operation during the first 24 hours after admission is as a rule unwise. We undoubtedly encounter many minor circulatory disturbances in these patients which can often be corrected by preliminary medical treatment which otherwise may prove to be a serious surgical handicap. The decrease in our mortality following the first day operations bears out this point.

It is difficult to state to what extent, if any,

Day of Death \ Day of Operation	1	2	3	4	5	6	7	8	9	10	11	12	13
1	xx												
2													
3	x												
4	xx												
5	0		0										
6													
7			0		0								
8	xx			0									
9	0			0									
10													
11													
12													
13						0							
14	xx	000	0		0	00							0
15	Et cet	era											

CHART 2.

Analysis of mortality record for 1925.
Abscissa represents day of operation after admission.
Ordinate indicates date of death after operation.
0 = chronic cases, x = acute cases.

rest and digitalization have had on our mortality as it is manifestly impossible to select two series of cases sufficiently similar with which a trustworthy comparison can be made. One's opinion on this point must be derived largely from impressions rather than statistics. It is interesting to observe that in our surgical mortality of 64 during the last three years, only 8 had received pre-operative digitalization. This is in spite of our liberal policy in the use of digitalis. It is not the purpose of this paper to enter into a discussion of the indications for digitalis therapy or to offer any new conception of its mode of action. Reference, however, should be made to the recent studies of Robinson on the effect of digitalis on ventricular output per beat. He has shown that etherization produced an increased output similar to that found in heart failure, but its effect is counter-balanced by the administration of digitalis which decreases the output and thereby restores cardiac activity to a normal state. Should his conclusions become established facts, a valuable contribution to digitalis therapeusis will have been made. In spite of conflicting experimental evidence, digitalis in our experience does have a beneficial influence on some patients showing myocardial involvement without an associated fibrillation or evidences of congestive heart failure.

It is possible that too great emphasis has been placed on the stethoscope and blood pressure instruments for determining the integrity of the heart and not enough upon its response to exercise. Many cardiac functional tests have been devised all of which are open to some criticism. Experience has taught us that patients showing dyspnoea after walking up a flight of stairs or even after taking a few bending exercises are often victims of cardiac weakness and should be treated accordingly. Operative procedures on such patients should be undertaken only after due consideration of this possible factor.

It is my belief that there are many mild cardio-vascular disturbances, especially after the age of 50, which are often not recognized by the usual clinical methods and which are helped by hospitalization.

In conclusion, the following points seem to be worthy of emphasis:

1. Successful surgery is closely allied with successful medicine. Co-operative study tends towards the best interests of the patient.

2. The surgical mortality in St. Elizabeth's Hospital reached its peak following 1st day operations. Approximately 50 per cent of the deaths occurred in the group operated upon within 24 hours after admission. Naturally some cases of an emergency nature require immediate operation and cannot admit of delay, but in the other class of surgical cases the mortality rate seems distinctly greater in those patients that are operated upon within a day after their admission than in those on whom the operation is delayed for a longer time.

3. Post-operative deaths due to known cardiac failure is a negligible factor in hospital mortality.

4. There is some reason to believe that many mild cardio-vascular lesions exist which are not recognizable by the usual clinical methods and which can be helped by pre-operative treatment.

5. Rest and complete digitalization are recommended for all surgical patients over 50 years of age as well as others showing evidence of circulatory failure. An exception to this rule is made in the small group of cases where digitalis is contraindicated.

6. An added safety is afforded the non-emergency patient when at least a thirty-six hour pre-operative hospital period is provided.

Medical Arts Building.

PERITONITIS AS RELATED TO APPENDICITIS.*

By J. E. RAWLS, A. B., M. D., F. A. C. S., Suffolk, Va.
Surgeon to Lakeview Hospital.

Does appendicitis *per se* ever kill a patient? For argument's sake we will say no. What is it, then, that kills the patient in the so-called deaths from appendicitis? For argument's sake we will say peritonitis is the cause.

All that agree with me say silently—"Amen." Thank you.

We have a unanimous vote in favor of peritonitis and not appendicitis as the cause of death.

Now, since we are together, our mutual problem in appendicitis is a question of peritonitis and not appendicitis.

Years ago peritonitis was a hideous word—a death dealing disease. In more modern times it is not a disease but a secondary pathological condition. Time has apparently

*Read before the Seaboard Medical Association, at New Bern. N. C., December 8, 1926.

changed things and still about 20,000 die annually in the United States of peritonitis.

Let us now consider the treatment of peritonitis.

In the treatment of any disease, the first and primary condition is that of prevention, or prophylaxis.

About four cases of peritonitis out of five are due to a ruptured appendix. If this is so, you would naturally think that the appendix should be removed before it ruptures.

Some doctors are so strong on this point that they dare not to enter the abdomen, or to have the abdominal cavity entered for any other cause, without removing the appendix. To leave the appendix in the course of another abdominal operation, they would consider it criminal.

Other doctors have said the pre-rupture period is the only time an operation is indicated for appendicitis. After this, if an operation is indicated, it is for peritonitis.

There are other doctors who do not seem to realize the importance of the pre-rupture period. They will delay or take chances when the appendix is threatening rupture and death to the patient in the way of a peritonitis. At the same time they would not dare to take chances with the same patient at high speed on an old diseased automobile tire for fear of rupture or blowout.

All acute appendices when diseased are threatened by rupture. They usually rupture about 30 to 48 hours after the onset of the disease.

In removing the diseased appendix before 30 to 48 hours after the onset of the disease, you will have averted peritonitis with practically no death rate by the greatest of all treatments, namely, prophylaxis.

Physician, think ye upon these things!

NEPHRITIS IN GENERAL.*

By R. M. LECOMTE, M. D., A. C. S., Washington, D. C.
Professor of Genito-Urinary Surgery, Georgetown University.

Since the paper of Bright in 1836, all lesions of the kidney not definitely neoplastic or congenital malformations have been generally classified as inflammations under the term nephritis. In 1919, William J. Mayo divided the lesions ordinarily brought together under the term "nephritis" into three groups:

1. Wet nephritis.
2. Dry nephritis.
3. Inflammation proper.

This is the most practical classification of these lesions that has been advanced, since it is broad enough to group all of them on a clinical basis and is elastic enough to permit subdivision as our knowledge grows. If we add to this Volhard's grouping of the types not definitely inflammatory, a conception of nephritis that is of value in diagnosis and treatment is obtained.

The primary division of Volhard is dependent upon whether or not there are changes in the walls of the blood vessels of the kidney. In the group without blood vessel changes are included localized infectious nephritis and nephrosis or toxic kidney. The former is a direct infection of both kidneys by bacteria coming from a septic focus elsewhere—generally the tonsils.

It may vary in degree from a slight infection which recovers promptly to the miliary abscesses noted in acute septicemia. The infection of moderate intensity concerns the internist, and may benefit by his early diagnosis and prompt treatment. Clinically, there is no edema, increased blood pressure or cardiac hypertrophy, retinitis, or kidney insufficiency; the blood chemistry is normal, and the only differentiating sign is a more or less marked hematuria which varies with the activity of primary focus of infection. To this differentiating sign I would add albuminuria without formed elements. I have followed one case of this sort for ten years. It occurred in a laboratory technician whose only urinary sign on repeated examination was albuminuria. In succession there were removed the tonsils, a hydrosalpinx, and, finally, an infected gall-bladder, after which operation the albuminuria disappeared and has now been absent for four years.

Unless the primary focus is discovered and can be cured, this type is apt to result in diffuse chronic glomerulo-nephritis.

When unilateral and severe, I believe that this same lesion may be the so-called Brewer kidney and treated by decapsulation or nephrectomy. Doubtless, many of the unilateral essential or idiopathic hematurias that clear up after intrapelvic injections of silver nitrate are examples of this disease. Pelvic irrigation should be considered in all cases of persistent renal hematuria, even if bilateral, unless edema or hypertension is present.

*Read in symposium on urology before the Section on Internal Medicine of the Medical Society of the District of Columbia, October 22, 1926.

The second type of this group without blood vessel changes is termed nephrosis. Pathologically, it is a degeneration of the renal epithelium of toxic origin. It occurs as a result of syphilis, diphtheria and tuberculosis, and, of course, in an idiopathic form. The kidney lesion itself resembles that induced experimentally by the administration of bichloride of mercury, phosphorus, and arsenic to animals. The symptoms which differentiate it are edema without increased blood pressure; albumin, casts and blood occur in the urine; the blood chlorides are increased, while those in the urine are diminished. The prognosis is good following diphtheria and in the syphilitic form when treatment is administered.

In tuberculosis it is bad, usually winding up in amyloid kidney.

Treatment of the kidney lesions is that of the primary disease of which they are a part, together with splinting of the kidney over the crisis by a salt free dry diet rich in albumin and such medication as will influence the edema favorably.

The idiopathic form commonly progresses to contracted kidney.

The point at which the forms without blood vessel lesions go over into the second group is indicated clinically by the development of increased blood pressure. In them are also frequently found albuminuric retinitis and a marked tendency to renal insufficiency. Three forms of these types are to be recognized,—acute and chronic diffuse glomerulo-nephritis and the contracted kidney or chronic interstitial nephritis.

Acute diffuse glomerulo-nephritis is due to a narrowing of the glomerular vessels secondary to the type noted in considering the first group, as a result of infectious disease (scarlet fever), from exposure to cold or dampness, or to pregnancy. Clinically, there is scant, bloody urine, edema, and increased blood pressure; the blood chlorides are increased, while the nitrogens remain normal. The prognosis is serious in every instance. In treatment appropriate measures are taken to control the edema, acute cardiac insufficiency is to be guarded against, and, in case of complete anuria, kidney decapsulation may be done.

Chronic diffuse glomerulo-nephritis results from continued changes in the glomerular vessels with secondary parenchymatous degeneration or endarteritis obliterans. These result from unhealed lesions of the acute form or from poisons that gradually affect the vessels in a diffuse manner, for example, lead poisoning. Clinically, edema predominates if parenchymatous degeneration is marked, increased blood pressure when an obliterating endarteritis is marked. Both chlorides and nitrogens are retained in the blood. The prognosis is bad in every instance, the disease eventually ending in contracted kidney and renal insufficiency unless the damage to the heart muscles is sufficient to cause a heart death before this ensues. Treatment is palliative and directed at the anemia, heart failure and edema.

The final stage of these lesions, interstitial nephritis or contracted kidney, may result from chronic diffuse glomerulo-nephritis or from wearing out of the organ;—this latter is from frequently repeated mild injuries with scar tissue replacement. When fully developed, there is markedly increased blood pressure and a urine poor in solids with very little albumin. The blood nitrogens are high, while the chlorides are low except during attacks of edema. Clinical differentiation between this type and chronic glomerulo-nephritis is impossible or, at best, is only a shrewd guess.

The prognosis is good as to years of life, and somewhat better in this respect in old people than in young ones; as to cure it is bad. The terminal stage is reached when the blood creatinin exceeds 5. mg. The treatment is symptomatic and directed largely at the associated heart lesions.

In the presence of true uremia, flooding the tissues with water and increasing elimination by hot packs and cathartics is indicated.

In the chronic varieties, mixed lesions are the rule rather than the exception, so that the exact differentiation with the information that we can get today is not possible.

Time does not permit a consideration of the true infections of the kidney—those amenable to surgical treatment.

In summarizing, the practical results of this consideration may seem small in comparison with the amount of time and effort given to it. However, if it has given to any one the idea that nephritis, on a basis of pathologic anatomy, progresses from one stage to another till the fixed form of contracted kidney is reached, unless the cause is determined and removed, it will have served its purpose. Another idea

is, that greater service can be rendered the patient if, clinically, an attempt is made to study the disease on a basis of pathological physiology, rather than to try to classify the patient into one or another of the categories mentioned on a basis of post-mortem findings.

Nephrosis, or toxic kidney, does not become an incurable disease until the blood vessel changes have taken place,—this being measured by the development of increasd blood pressure. Consequently, the search for a causative focus is not a waste of time until this persistent hypertonia is noted. The search should not be given up even then, but it will be prosecuted with more hope and more vigor so long as this clinical feature is recognized and good results lie in prospect.

Another finding is that clinical differentiation between the large white kidney of chronic parenchymatous nephritis and small white kidney of chronic interstitial nephritis is unattainable in the light of our present knowledge. If this fact is recognized, the internist will save himself much unmerited self-criticism.

1801 *Eye Street, Northwest.*

SOME CLINICAL CONSIDERATIONS OF HEMATURIA—WITH LANTERN SLIDES.*

By W. CALHOUN STIRLING, M. D., F. A. C. S., Washington, D. C.
Associate Professor of Genito-Urinary Surgery, Georgetown Medical School.

Introduction

The subject of hematuria has been rehashed so thoroughly in the past few years that it is with some reluctance that this subject was chosen for discussion. However, when one sees the frequency with which this condition is dismissed and the patient assured that there is nothing seriously wrong, it is felt that attention should be directed anew to its importance. This paper comprises a review of 300 urological cases treated by the writer, in which hematuria was one of the presenting symptoms. One of the reasons that hematuria is so lightly dismissed is the fact that, in the majority of cases, it is periodic in time and there is often a cessation of symptoms, following the administration of a urinary antiseptic. Thus, the patient is assured that the bleeding was of no consequence or the result of some minor disorder. Kretschmer says that the presence of blood in the urine is indicative of organic disease in the genito-urinary tract. He further states that if this viewpoint would be assumed by all physicians, many patients who now seek relief for various urological lesions would be seen early in the course of the disease and at a time when much could be done, whereas, procrastination at this time often permits the disease to become so advanced that it is incurable. As a result of the improvements in urography at the present time, one is able to determine definitely the source of practically all cases of hematuria, and to lessen the number of cases of essential or idiopathic hematuria. In no other specialty can such precision in diagnosis be obtained as in urology, so that one should be able to locate the source of bleeding as well as best outline the treatment necessary. As a result of the propaganda for health examination by insurance companies, as well as the emphasis being made on the necessity of periodic health examinations by various lay writers, hematuria has been found to be far more frequent than was formerly thought. The day when the patient was dismissed after the finding of a few red blood cells in the urine is past, as it is generally recognized that even the presence of a few red blood cells in the urine is indicative of some serious disease, where recent trauma or venereal infections can be ruled out.

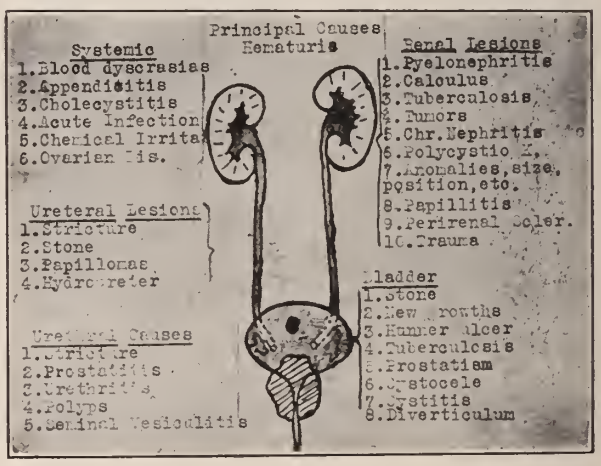


Fig. 1.

Etiology

The cause of hematuria may be conveniently divided into five main groups in the order of

*Read by title before the fifty-seventh annual meeting of the Medical Society of Virginia, at Norfolk, October 12-15, 1926. Also read in symposium on urology before the section on Internal Medicine of the Medical Society of the District of Columbia, October 22, 1926.

their frequency: first, inflammation; second, stone formation; third, neoplasia; fourth, obstructive lesions, and fifth, the chronic nephritides. Hematuria may result from extraneous sources and may be divided into two groups; the first being the result of systemic disease; the second, the result of inflammatory reaction in adjacent structures. Among the more common systemic diseases which may result in the appearance of red blood cells in the urine are purpura hemorrhagica, haemophilia, polycythemia vera, leukemia, Hodgkin's disease, splenic anaemia, schistosomiasis, i. e., blood fluke trematode, and cirrhosis of the liver.

A case of purpura hemorrhagica was seen recently by the writer, in which hematuria was the outstanding symptom. Case Report: A female physician, age twenty-three years, was seen November 10, 1925, complaining of severe pain in the right kidney region with hematuria. Dr. Minot, of Boston, had seen the patient sometime ago and made a tentative diagnosis of purpura. A uretero-pyelogram revealed a sharp kinking at the uretero-pelvic junction, but no distortion of the pelvis proper was seen. An intravenous thalein showed the output of each kidney to be normal. The patient was seen at various intervals throughout the year, during which time she had several profuse hemorrhages, one of which required a transfusion. A nephrectomy was suggested, but the patient refused to have it done. She had the typical subcutaneous blood extravasations in the skin seen in purpura. Her blood chemistry showed a low calcium content and delayed clotting time, with diminution in blood platelets. The blood nitrogen was normal.

Eisendrath quoting Locke and Minot reported several of these blood dyscrasias, including the hemophilia group, which caused hematuria. This suggests a careful history and blood examination, as well as a thorough physical examination to detect the presence of any hemorrhagic spots in the skin. The blood calcium should be determined, together with a check of the bleeding time, in order to rule out the systemic group of cases which result in hematuria.

Diseases adjacent to the urinary tract which may result in blood in the urine include appendicitis, carcinoma of the uterus, ovarian cysts, gall-bladder disease, pregnancy, etc. These above-mentioned diseases not infrequently involve the ureter by direct continuity, or involve the kidney as a result of a severe bacteremia, and thus result in hematuria.

It is not uncommon to find red blood cells in the urine as the result of acute inflammation of the appendix. The writer found this present in a large group of cases seen in consultation with a general surgeon. At times it requires all of the ingenuity both of the general surgeon and the urologist to determine the exact location of the infection. Inflammatory changes in the kidney are often the sequelae of acute intra-abdominal conditions due to the toxins liberated in the blood. Acute appendicitis and calculus in the right ureter may be confused and thus result in a needless appendectomy. However, if any doubt exists as to whether or not inflammation of the appendix is present, it is better to do an appendectomy rather than overlook an occasional pus appendix. Other extraneous cases of hematuria can usually be ruled out by a careful history, laboratory, and physical examination.

A complete X-ray study should be made previous to a urological study in every case, as this is very helpful in eliminating stone, renal dystopia, and possibly new growths. This point cannot be too strongly emphasized. It has been the writer's experience to frequently see cases that had received prolonged treatment without the formality of an X-ray, and in several of these a urinary calculus was found to be the cause of the bleeding. The two-glass urine test is also helpful in indicating the source of the bleeding.

In this study of 300 cases in which hematuria was an accompanying symptom, venereal and prostatic infections were excluded. Fifty-three per cent of the cases were due to lesions of the upper urinary tract. Forty per cent were vesical in origin, and the remainder the result of extraneous causes. The renal lesions resulting in hematuria occurred as follows, in the order of their frequency: (1) pyelonephritis; (2) calculus formation; (3) obstructions; (4) tuberculosis; (5) new growths; (6) chronic nephritis; (7) anomalies. Among the less common causes were hydronephrosis, pyonephrosis, polycystic kidney, pyelitis of pregnancy, papillitis, and following the administration of some drug such as urotropin, mercury, turpentine, etc. A summary of each group will be enumerated as follows:

Pyelonephritis.—Inflammatory reactions in-

volving the kidney pelvis and parenchyma not infrequently result in hematuria. The cortical lesion is often metastatic in origin and usually is the result of a distant foci, such as the teeth and tonsils. One occasionally sees petechial hemorrhages with abscess formation beneath the renal capsule, especially in the more fulminating type of case. This usually extends to the kidney pelvis, resulting in pyelitis. A pyelogram will often show the pelvis to be slightly dilated, and if the infection is severe, irregularity of the contour may be seen. This condition is characterized by the appearance of clumped pus in the urine.

Case Report. C. R., age twenty-one, was seen December 10, 1920, complaining of severe pain in the left side and back. Red blood and pus cells were present in the urine. A cystoscopic examination showed a functionless left kidney with much pus from that side. The patient was very ill, the thermal curve ranging around 104. A left nephrectomy was done for the pyonephrosis. Sections from the kidney showed an acute pyogenic infection throughout the kidney. Recovery was uneventful.

Fig. 2.—Pyelogram showing marked kidney infection. Marked pyelectasis with kinking of ureter. Minor calices blunted and blurred.

Stone.—Hematuria is present at some time during the passage of a ureteral calculus, and is very suggestive when seen during an attack of acute renal colic. This should not be confused with acute pyelitis, as one often simulates the other, and many cases of pyelitis are erroneously diagnosed as stone. A plug of pus will produce the same symptoms as stone, due to acute blockage of the ureter, which results in distention of the kidney capsule, with subsequent pain. An X-ray will aid in the diagnosis of stone, and is positive in approximately 90 per cent of the cases.

Case Report: Mrs. A. L., age forty-six, entered the hospital February 1, 1925, complaining of severe pain in the right side, nausea and vomiting, together with the passage of blood in the urine. The patient had a similar attack three years ago, at which time a plain X-ray was made, showing a shadow in the region of the kidney pelvis. A pyelogram was not done. An exploratory nephrotomy was done elsewhere without success, as this shadow was later proven to be a migratory stone which roamed at will in the ureter. A cystoscopy, on February 2nd, following an X-ray examination, showed the stone in the lower ureter. A left uretero-lithotomy was done after

Fig. 3.—Giant ureteral calculus impacted low in the ureter, producing hydronephrosis. Uretero-lithotomy required. Stone 2x3 cm.

anchoring the stone *in situ* with a ureteral bougie. Recovery was uneventful.

Obstructions.—Much attention has been focused on obstructions of the ureter in the last few years by Hunner. He has demonstrated that ureteral stricture is a definite clinical entity, and must be kept in mind in any obscure renal lesion. Rathburn, Lowsley, and others, have confirmed Hunner's findings, so that ureteral stricture should be kept in mind in any obscure hematuria. A wax-bulb catheter with a pyelo-ureterogram will demonstrate the presence of this condition.

Case Report: Mrs. G. R., entered the hospital November 10, 1925, complaining of severe pain in the right epigastrium, nausea and vomiting, frequency of urination, and tenesmus. A catheterized specimen of urine showed

Fig. 4.—Pyeloureterogram showing marked obstruction of lower ureter, producing back pressure on kidney pelvis. Pelvic contour distorted. Blunting of minor calices.

red blood cells. A mass was noted in the right upper abdomen. It was freely movable and was notched. The patient was in consultation with Drs. Thomas, Sullivan and Duehring, and the consensus of opinion was that it was either a kidney or gall-bladder condition. The patient also had an inoperable carcinoma of the uterus. Her condition was so grave that a cystoscopy could not be done, death occurring four days after admission into the hospital. At necropsy a bilateral ureteral stricture was found, with extreme hydroureter and hydronephrosis. Each kidney pelvis and ureter held over 300 c.c. of fluid. Death resulted from uremia, together with cachexia, with degeneration of all of the internal organs. This case illustrates the extreme dilatation which may occur as the result of stricture of the ureter.

Tuberculosis.—One of the earliest findings in tuberculosis of the kidney is red blood cells in the urine. This is due to the breaking down of minute foci situated beneath the pelvis of the kidney. Later, these foci undergo necrosis, and one not infrequently sees the entire kidney destroyed from caseation and necrosis. Given a patient with severe tenesmus and the presence of blood in the urine, one should always look for the tubercle bacillus, which can be found in the urine in approximately 90 per cent of the patients suffering from this condition. Several cases have been recently seen in which only minute foci of tuberculosis could be found, and these were principally microscopic. Tuberculosis is bilateral in 20 per cent of the cases, and in order to obtain the best results the patient must be seen early.

Case Report: Miss L. B., entered the hospital October, 1926, complaining of extreme tenesmus and frequency of urination. The urine was blood tinged. The patient gave a history of having to get up eight or ten times at night to void, lasting over a period of two years. Cystoscopic examination revealed small ulcers situated about the right ureteral orifice. A specimen of urine from the right kidney contained an occasional tubercle bacillus. Right nephrectomy was done with partial extirpation of ureter. Sections made after removal of the kidney showed almost complete destruction of the kidney from tuberculosis. The patient made an excellent recovery.

New Growths.—Hematuria is present at some time in approximately 70 per cent of all renal tumors, and constitutes the principal sign of the classical triad of symptoms pathognomonic of this condition, i e., mass, bleeding and pain. The bleeding with new growths is characteristically intermittent, usually painless, and quite often very profuse. A pyelogram will usually show distortion of the pelvic contour, and is very helpful in making a diagnosis of this condition.

Case Report: Mr. B., entered the hospital July 19, 1926, complaining of a mass in the right upper quadrant. The urine had contained blood at various intervals over the past twelve months. The mass in the upper right side had gradually increased in size, and there had been a marked loss of weight. A diagnosis of gall-bladder disease was made six months ago, followed by an exploratory operation. The patient was told that the gall-bladder was diseased, following the Graham technique, but the exploratory operation revealed a normal gall-bladder. A cystoscopy at this time showed characteristic deformity of kidney pelvis with a diminished thalein output. A right sub-capsular nephrectomy was done: recovery was uneventful. The tumor measured 8x10 c.m. Sections showed papillary adenocarcinoma (hyper-nephroma).

Fig. 5.—Pyelogram showing marked distortion as result papillary adeno-carcinoma (hypernephroma.) Tube was from previous intra-abdominal operation.

Chronic nephritis not infrequently causes hematuria, and usually follows an acute infectious disease. Nephritis is a part of the systemic involvement as a result of the bacteremia, and usually reveals itself by the presence of casts and a trace of albumen in the urine. The acute infection may run its course and leave no permanent renal damage, or result in chronic glomerulo or interstitial nephritis. In the latter condition the blood pressure is usually higher than normal, albumen and casts are present, and myocardial changes are not uncommon.

Case Report: Miss G. R., age eighteen. was seen in consultation January 20, 1925, complaining of headache, nausea and vomiting, and anorexia. A catheterized specimen showed red blood cells, albumen and granular casts. The patient was seen following an attack of influenza which lasted two weeks. There was a slight impairment of the renal function, as shown by the thalein test and blood urea. With rest, diet, and supportive treatment, the patient gradually recovered and was discharged cured.

Thirty per cent of this series of hematurias were vesical in origin, and occurred in the order of their frequency as follows: Benign adenoma of the prostate, tumors, stone, simple and tuberculous ulcers, diverticulum, and cancer of the prostate. Lack of time precludes a discussion of each of these groups. However, a diagnosis can be made by cystoscopy, and in some of the obscure conditions, such as diverticulum, cystography will confirm the cystoscopic findings. Cancer of the prostate can usually be detected by the stony hardness felt upon rectal palpation. All cases of suspected malignancy should be rayed for possible metastases, as from 30 to 40 per cent have metastasized by the time the patient is first seen.

Bibliography.

1. Locke, E. A., and Minot, G. R.: Hematuria as a Symptom of Systematic Disease, *J. A. M. A.*, 83:1311 (Oct. 25), 1924.
2. Eisendrath, D. N.: Hematuria, Its Interpretation, *J. A. M. A.*, March 20, 1926, V. 86, pp. 825-828.
3. Kretschmer, H. L.: Hematuria, *Surg., Gyn. and Ob.*, May, 1925.
4. Crabtree, E. G.: Personal Communication.
5. Stirling, W. C.: Review of 300 Cases of Kidney Infection, *Virginia Medical Monthly*. February, 1925.

Washington Medical Building,
1801 *Eye Street, Northwest.*

THE SINUS PROBLEM.*

By G. B. TRIBLE, M. D., Washington, D. C.

The problem of the sinuses is not a mere figure of speech. In no field has it been harder to get away from inherited presumptions, and to consider carefully the fundamental facts of anatomy and pathology and to rescrutinize the testimony and opinions that have prevailed.

*Read before the District of Columbia Medical Society, at Washington, D. C., November, 1925.

There are in practice three sub-divisions of this problem intimately interwoven and intermingled, and a solution must be obtained that will be satisfactory from three standpoints: First, that of the patient. What can he expect or hope for from the various methods and procedures offered? Second, what result can the physician, the surgeon, ophthalmologist or other specialist legitimately expect from the treatment by the rhinologist,—and are the dangers so great, and the limitations so confined, the successes so few, that we may properly doubt the wisdom of submitting our patient or advising our friend to undergo the expense, loss of time, or other inconveniences from operations, let alone the possibility of fatality?

From the rhinologist's point of view must be considered the feasibility of the treatment, the operative measures to be adopted, either as adjuncts or as of curative value in themselves. Also, the anatomical relationships of the field to be attacked, its surgical accessibility, the reasons for temporary set-backs and partial failures must be fully taken into account and means devised to overcome them.

With the multiplicity of cults and even with the division and quite proper difference of opinion among medical men themselves, the patient is bewildered. He has now been "sold," commercially speaking, on sinusitis; he now considers it one of the evils to which flesh is heir; his education the past few years has been brought to the point that when he has a persistent headache or neuralgia, nasal or post-nasal discharge, sneezing, stuffiness of breathing, prolonged loss of sense, of smell or taste, he will diagnose his case as sinusitis, and either independently begin some sort of treatment, consult his physician, or come direct to some recommended specialist. There is now even a chance of his overdoing it and not taking into account the possibility of other factors entering into his condition. Progress in medicine is made, unfortunately, by fits and starts, by action, over-action, then reaction,—later, the establishment of advance along a compromise or mean. This has been true of gynecology, of surgery of the appendix, and will probably be true of the sinuses. Granting that a diagnosis of sinus involvement as the predominating cause of complaint has been reached, the question of relief of symptoms becomes paramount in the patient's mind. Can he be cured? If not, can he be relieved? In the main, the answer can safely be given in the affirmative, provided no complications have set in, though a strict histological examination would probably show that no sinus, infected by pathogenic organism over any prolonged length of time, ever precisely returns to the normal. The analogous structure, the middle ear, communicating likewise with the upper respiratory tract, though more highly specialized, usually shows persistent interference with function after a healed suppuration or a cleared tubal stoppage.

The day has almost passed, fortunately, when a patient comes for examination, giving a history of persistent headache, nasal discharge or "catarrh" in his language, coupled with marked signs and a blood picture of secondary anemia, stating that he has been examined and radiographed thoroughly, all except his head. Usually in such a case, the tonsils have been removed and a few teeth extracted, undoubtedly very worthy therapeutic measures, but not sufficient to clear up his condition or to understand the basic reasons for the existing symptom complex.

The arguments against operative measures can be grouped under two great heads: first, unpleasant consequences, complications arising, during the operation or unforeseen sequelae, and second, failure to cure. Under operative procedures are here included such simple measures as probing the ostia, amputation of the anterior end of the middle turbinate, and diagnostic puncture of the nasal antral wall beneath the inferior turbinate. This last has had attributed to it a number of fatalities, usually believed to be due to the injection of air or fluid which may find its way through dehiscences of the bony wall into the orbit or even dura. This is in cases where no error of technique has caused penetration of other than the antrum. Simple removal of the anterior end of the middle turbinate has been thought to be productive of antral disease by permitting infected material from the upper sinus group to be deflected into the antrum, while severe hemorrhage and an occasional meningitis from either brain trauma or packing has been reported. Snaring of polypi has even been fatal but only with extensive pre-existing bone disease. Probing or attempted probing of the frontal and sphenoid have also had a series of unfortunate consequences, due almost entirely to the fact that the sinuses are anatomically vestigial organs, and the excep-

tion is the rule. The series of deaths collected and reported by Loeb following nose and throat work are astounding, but, so far as sinus operation deaths are concerned, can be explained for the most part by unexpected anatomical relationship, and a study of these reports will bear out the opinion that, in a large percentage of these cases, the pathology had so advanced that a fatal outcome from complications could not long have been avoided. The complications and lack of success in the more important operations are correspondingly found, and may be simple, such as dryness, crust formatiou, recurrence of discharge, persistence of pain, osteomyelitis, septicaemia, extension to the dura, or the lighting up of dormant brain abscesses. Unfortunately, in these cases, with an infection of long standing, even after a surgical cure, the primary shadows in a radiograph persist for a long time, or occasionally are permanent and cause a great deal of chagrin to the operator when the patient consults other specialists, is radiographed again, and told that there is a cloudiness, or opacity in one or more sinuses.

The presentation of all the complications and untoward results naturally brings up this question: Why treat these cases? Or, if they are treated, why not treat the most grave as well as the simple ones by palliative measures? Fortunately, this is what can be done in a simple acute case, suppurative or non-suppurative, unless there are threatening complications. Every coryza of any duration is complicated or followed by an inflammation of one or more of the accessory air cells. The usual treatment by salines, mild antipyretic measures with hot or cold drinks, and topical applications of heat or cold to give relief from pain, is about all that is indicated. In the acute cases with rapid extension, more active treatment must be instituted, drainage secured, whether by the simple shrinking of the inflamed tissue of the nasal mucosa, or by the surgical removal of obstructions, and will usually take care of such infections. It is well to bear in mind that at any time during the course of such conditions, threatening extensions may arise, and for this reason these patients should receive the care of a specialist. The question of light or heat therapy, or, in fact, any therapy that avoids surgery, is constantly in the foreground, and among these measures there is to be considered the newer style quartz lamp. It must be borne in mind that authority can be found in literature for any measure imaginable, no matter how weird the therapeutics. Even the makers and distributors of the quartz lamp do not claim for it the penetration of bone, contenting themselves with the assertion that exposure to this light stimulates calcium metabolism, as in the treatment of rickets by this means, and, indirectly, is of service even with bone involvement. Along this line we also have the use of calcium and thyroid or para-thyroid internally, which does seem to have a distinct therapeutic value, especially in the low grade, long continued processes, associated with or sequel to vasomotor rhinitis.

The next measure is the application of one of the various types of vacuum pumps, which also is of great merit in properly selected cases, especially of the upper sinus group, but preferably after the mucosa has been shrunken with a weak solution of cocaine and adrenalin and any mechanical obstacles removed. It can be readily demonstrated, but can be seen without demonstration, that such an apparatus can be of no avail in an antrum suppuration, for the natural opening is near the superior wall or roof of the antrum of the classic case, with no septa, and, besides, has a tortuous course. After such treatment, it is usually better to use a simple alkaline irrigation, and then pack the nasal chamber with strips of gauze or bandage material saturated with one of the colloidal silver preparations or one of the newer dye antiseptics.

No matter from what angle considered, the rational treatment of all chronic suppurative sinus infections, and a large percentage of the non-suppurative, involves ultimately some degree of surgery. This is predominantly true in all antrum infections of dental origin, or complicated after their onset by some dental condition. In the sinus conditions of children it is a surgical question even though the surgery is not always directed to the area involved. We find, for instance, proper removal of tonsils and adenoids will serve to permit ventilation and areation of these cells.

Aside from the discomfort and pain with the non-suppurative cases—which may be from an involvement of Meckel's ganglion, which is situated in the nasal chamber just posterior to the end of the middle turbinate, and poorly protected—and from the discharge or polypoid degeneration of the suppurative, what are the dangers in allowing these conditions to con-

tinue? It can be clearly shown that these conditions are not without danger; case after case with optic nerve involvement, or the production of an irido-cyclitis, are on record, and this is only a question of the complications involving a single organ.

The ocular complications have been more thoroughly studied than involvements from the sinuses reaching other organs. They are probably more frequent from the close relationship,—for the eye as an organ is surrounded on three sides by extensions of pneumatization. The optic nerve may lie directly in the posterior ethmoids or sphenoid. Birch-Hirschfeld has reported almost 60 per cent of orbital inflammations as of sinus origin. This is the result of either direct extension, as an orbital periostitis, osteitis, orbital cellulitis, or abscess. The rich anastomosis of the veins around the sphenoid and ethmoid leads to both orbital and dural thrombo-phlebitis, while the position of the optic nerve from its course through the optic canal to its actual entrance into the globe renders it subject to attack, whether from pressure of exudates, inflammation of the retro-bulbar portion, interference with the proper arterial and venous circulation, or from direct involvement by suppurative processes.

Extension to the brain is now coming to the fore, and intracranial complications can no longer be considered a rarity. Post-mortems by the thousands have shown pathology in the sinuses, ranging up to 40 per cent of all cadavers examined. For a long time, these findings and their significance were ignored, and the presence of empyema in these cavities was considered a terminal manifestation. The bacterial agents have been anything that have been found in the nose or throat and in the antrum with its dental infections, anaerobic organisms. These latter are characterized by an extremely fetid pus, in contra-distinction to the antrum infection of nasal origin. A simple non-suppurative sinusitis by blockage of drainage, or even the vacuum type, may become converted into the blennorrheic, and that into the suppurative, carrying in its wake osteomyelitis, rarefaction of bone; osteoporosis, may lead directly to meningeal involvement, which may start as a circumscribed pachymeningitis in the neighborhod of the bony involvement, or may extend as a pachymeningitis interna, followed by an abscess which may be extra-dural or intra-dural, or may produce an abscess deeper in the brain by extensions through the lymphatics or by means of a septic thrombo-phlebitis. This latter may account for the presence of abscesses far removed from the original site of the infection. The cases with fatal termination in sinus disease are due to brain involvement in the great majority of cases, though an occasional septicaemia may be responsible. Focal infection in widely different parts of the body from sinus infection may occur, but it is rarer than direct extension to the cranial cavity, and has not been so well studied. Depending upon the anatomical relationship, it is found in the case of the sphenoid that its complications are most often meningitis or an infective phlebitis of the cavernous sinus. Dehiscences in its wall may permit the mucosa to be in direct contact with the dura.

In the series of slides selected, an attempt will be made to trace the development of the sinuses, the anatomical relationships found, the question of injury to the teeth in external operations on the antrum, the dangers of probing, and the reasons governing, so far as we know them, the different types of complications found. No stretch of the imagination will be needed to show the dangers of unrecognized and imperfectly drained suppurations.

I wish to acknowledge my indebtedness to Dr. Parsons Schaeffer, Dr. Fielding Lewis, and Dr. Louis Clerf, of Philadelphia, for assistance in the matter of slides, and to Dr. Bierman, this city, for making originals and copies, and demonstrating them.

1801 *Eye Street, Northwest.*

Miscellaneous

Elimination of Substandard Drugs Object of New Survey by Bureau of Chemistry.

To see that potent pharmaceuticals comply with the standard of strength indicated by their labels, the Bureau of Chemistry has begun a resurvey of all the more important preparations, according to a recent statement by the officials of that bureau charged with the enforcement of the Federal food and drugs act.

The text of the statement follows:

"For the past two or three years the Bureau of Chemistry has been devoting special attention to the more important pharmaceutical

preparations, particularly hypodermic tablets and potent galenicals, on the American market. In this investigation the pharmaceutical manufacturers have co-operated actively through 'contact committees' appointed by their associations. These committees have devoted intensive study to the methods of analysis for some of the most important pharmaceuticals. particularly medicinal tablets, and have specified what they regard as allowable tolerances for some of them. Two reports submitted by the committees have been made available to the industry as a whole.

"There have been examined by the Bureau of Chemistry samples of a representative number of the products of practically all American manufacturers of drugs of the type under investigation. The results of this investigation have shown that, while the large majority of these products are reliable and true to label, a not negligible proportion has been at material variance from their professed standards. In a number of instances where the quality of the product has departed excessively from the expressed standards, prosecution of the manufacturers was instituted. There has been no indication of any intent on the part of any manufacturer of pharmaceutical products deliberately to adulterate his preparations. The deviations found have all been due, it is believed, to lack of adequate supervision and control.

Accuracy in Potent Medicines Essential

"The officials of the Bureau of Chemistry believe, and their opinion is shared by the responsible manufacturers, that in the case of medicines depended upon in emergencies and in the treatment of serious diseases no efforts should be spared to guarantee the accuracy of the dosage employed. It is usually impracticable for the physician to determine for himself whether or not a drug is of standard strength, quality, or purity. He must depend upon the manufacturer to furnish his medical supplies correctly made.

"Not only are the patient and the physician protected by a strict enforcement of the food and drugs act, but the conscientious manufacturer also is protected against the competitor who perhaps fails to exercise proper care in the manufacture and control of his preparations. This work, therefore, has had the hearty support of the pharmaceutical manufacturing industry as a whole, and no little of the accomplishments of the past few years is attributable to this moral support and active co-operation.

Wider Range of Products in Resurvey

"The Bureau of Chemistry is now preparing to resurvey the entire field of pharmaceutical preparations. It is the intention to include a wider range of products than was investigated in the first survey. In addition to hypodermic tablets and galenical preparations, there will be examined drugs in the forms of compressed tablets, tablets triturates, capsules, ampoules, and others. As a result of the previous survey and regulatory action brought in connection therewith, and as a result of the splendid co-operation from the manufacturers in studying intensively many of the problems involved and adopting more effective methods of control, it is believed that variations from declared standards throughout the entire field of pharmaceuticals will be much less than were found during the first survey. However, it is the intention, because of the general warning to the trade through the developments in the first survey, which impressed upon manufacturers the necessity for revision of their manufacturing and control methods wherever inadequate, to bring legal action during the coming survey on variations from standards whenever these are wider than warranted under adequate supervision. It is possible, therefore, that action may be taken in some cases which would have been passed over with a warning during the former survey.

"The ultimate purpose of this work is to eliminate substandard drugs from the American market with as little confusion as possible, so that physicians can rely upon the accuracy of the remedial agents which they prescribe or dispense.

"To this end the continued co-operation of the industry is invited. There can be no doubt of the possibility of mutual helpfulness, and indeed, of general benefit, from an exchange of information and the results of research on such subjects as the supervision and control of the manufacture of potent drugs."

Copies of the recommendations of the committees on the degree of accuracy for the hypodermic tablets under consideration may be obtained upon application to the Bureau of Chemistry, U. S. Department of Agriculture, Washington, D. C.

Womans Auxiliary Medical Society of Virginia

At the request of the officers of the Auxiliary, this space has been set aside for communications from them regarding matters of interest, both to the profession and to the women members of their families.

All communications should be addressed to Mrs. E. F. Truitt, Secretary, Westover Avenue, Norfolk, Virginia.

WHY A WOMAN'S AUXILIARY?

[Read by the President, Mrs. Southgate Leigh, at the annual meeting, October 13, 1926.]

This subject has been selected as I have been asked so many times during the year, "Why have a Woman's Auxiliary?" "What good is it doing?" And then I hear so much about *over organization*, and nothing for us to do.

Yes, it is true. Most all men's organizations have an accompanying organization for their wives, mothers, sisters and daughters. In these and in all worth while clubs there are doctors' wives who are leaders. But, there is no other organization besides the Woman's Auxiliary that has the good of the physician and surgeon at heart.

Why not use our Auxiliary as a means of promoting this club work, and let the credit be placed where it belongs?

The first Auxiliary grew from the falling off in attendance of the Dallas County Medical Society in Texas. This put the idea into the minds of doctors' wives that, if the wives could be interested, the doctors would attend the meetings more regularly. A small group tried it, merely as a social feature, but such splendid women as the doctors' wives soon found wide channels of usefulness. Thus they organized the first Auxiliary, learning very quickly that a working Auxiliary means a working County Medical Society.

There are twenty-four states organized and more than five thousand members. Virginia has about three hundred and fifty members.

The need for County Medical Societies in Virginia is very great. I visited a small town recently where there was no County Society and, of course, no Auxiliary. There I learned that the children were not compelled to be vaccinated, with an epidemic of smallpox in the next County, and the citizens would not even allow cards to be placed on doors where there were contagious diseases!

Even if there are only two or three doctors in a County, or town, you can urge your husbands to organize and with them carry out a wonderful health program.

The doctors are making the standard of their profession higher each year and the wives' particular part is to help through the Auxiliary. We should be the great power behind the throne to disseminate the knowledge the public is demanding. The intelligent general public demands higher standards from its doctors than ever before, and it has a right to.

In an article published recently in the *Saturday Evening Post*, entitled "Choosing Your Doctor," the first question asked was, "Has he the post-graduate habit?" "Is he still a student?" And *we* should ask, "Is he a regular attendant at the meetings of his local, state, and as often as possible, the National Medical Societies?" If not, he is slowly but surely falling behind the profession, for nothing can take the place of frequent contact, discussion and comparing of notes. The doctor who has stopped studying and discussing has stopped thinking.

Today the demand is for the doctor to be a teacher as well as a healer. It is the duty of the wife to urge his attendance at Medical Meetings, not that we doctors' wives want to be competitors of our husbands nor is it given us to do the good in the world which our husbands have in their power to do, but there is a distinct service that is our share in being a helpmate.

In preventive medicine, we have a direct message from the American Medical Association, and also from Dr. Wendell Philips, president of that Association, there is a call to arms in a preparedness campaign. The idea of annual physical examinations is not a new one but, when our National Medical President asks that each of us have a thorough physical examination once a year, we, as a State Auxiliary, are pledged to work for a 100 per cent score.

There is no higher calling than that of medicine. We are proud to be doctors' wives and help put across to laymen the principles of the greatest of all physicians, to overcome the false with the true, and teach that real health, real vigor, and real color come from within, that the rouged lips, tinted cheeks and artificial tan, that so easily fake a healthy look, are a menace to the health of the Nation,

but that exercise, diet and right living bring the health that endures.

I have learned that the physician's wife has a great influence for good, and that if we will become organized and work together, we may help raise the standard of the medical profession and we may aid in improving living conditions among those who need help in our home communities and in the Nation.

It has been through the deep and eager interest in health matters taken by the Women's Clubs and the Parent-Teacher Association Workers, and the splendid service they are giving in support of public health movements, that the average head of a family today is quite capable of appreciating and grasping the explanations of the medical profession.

The Auxiliary can be of great assistance to the Parent-Teacher Association by carrying out their splendidly planned pre-school and school work in districts where there is no organized Parent-Teacher Association. Also in our women's clubs, your Auxiliary could ask for a day and put on a health program each year. We must be leaders in health crusades.

The American Medical Association saw the need of putting into the hands of the laity, reliable information, and is publishing a splendid magazine of health, "*Hygeia*," and "*Hygeia*" represents the thoughts of the greatest minds of the American Medical Association relating to health problems as they should be presented to the people. "*Hygeia*" is probably the most valuable magazine published in America today. A service of untold value is rendered by the Auxiliary when this magazine is put into the hands of the public. Let it be your ambition that every school and public library in the State will be users of "*Hygeia*." The slogan is "*Hygeia* in the hands of every school teacher."

Why an Auxiliary when there is so much for us to do!

Will you not, every one of you, come into our Auxiliary, determined to put your very best effort into this work? You are needed and this is your task. Also, it is to the best interest of *your doctor* and his profession.

"To the Doctor's Wife"

"Into your keeping he has given his heart,
His professional life is a thing apart,
A life that is built on a vision divine,
To minister to all suffering mankind.
A service to which he is giving his life,
But remember his happiness is made by his wife.
So wake up to the vision of what you can do,
To the part in this service that is open to you."
—*Addine C. Myers, (President of the Woman's Auxiliary to the Medical Society of Georgia.)*

I am indebted for some of the above information to the Year Book of the Woman's Auxiliary to the Texas Medical Society.

526 *Shirley Avenue.*

The Dinwiddie Medical Auxiliary,

At a recent meeting, elected the following officers for the ensuing year: President, Mrs. Edwin J. Nixon; vice-president, Mrs. C. S. Dodd; recording secretary, Mrs. Claiborne T. Jones; corresponding secretary, Mrs. W. M. Bowman; treasurer, Mrs. William B. McIlwaine. The meeting was held at the home of Mrs. Wright Clarkson, retiring president.

Proceedings of Societies

The Alexandria Medical Society,

At its annual meeting held early in December, elected the following officers for the ensuing year: President, Dr. F. M. Dillard; vice-president, Dr. W. Clyde West; secretary-treasurer, Dr. H. A. Latane. All are of Alexandria. The attendance was excellent and included several visitors. An interesting paper was presented by Dr. West. Following the meeting, an elaborate supper was served.

The Lynchburg and Campbell County Medical Society,

At is regular meeting on December the 6th, under the presidency of Dr. Hunter B. Spencer, elected to membership Dr. A. G. White, of Lynchburg, R. F. D. 5. At this meeting, Dr. R. M. Taliaferro was elected president, Dr. Sam Wilson, vice-president, and Dr. S. E. Oglesby, secretary-treasurer, succeeding Dr. F. Musgrave Howell who has filled this position most acceptably for some years.

The Richmond Academy of Medicine,

At its regular meeting held December 14th, elected Dr. Stuart Michaux president, and Drs. M. L. Anderson and Warren T. Vaughan first and second vice-presidents, respectively. Dr. A. L. Gray presented a very interesting paper.

The Petersburg Medical Faculty.

Dr. J. Shelton Horsley, President of the Medical Society of Virginia, gave an interesting address before the Faculty at its regular meeting on December the 18th. Following this, there was the annual election of officers.

Dr. W. C. Moomaw was elected president, Dr. E. W. Young vice-president, Dr. William B. McIlwaine, corresponding secretary, and Dr. John M. Harwood was re-elected secretary-treasurer.

The Truth About Medicine

In addition to the articles enumerated in our letter of October 29th, the following have been accepted:

Cutter Laboratory
- Tetanus Antitoxin for Human Use, 10,000 Units.
- Tetanus Antitoxin for Human Use, 20,000 units.
- Typhoid Prophylactic, 1 c.c. syringe.
- Typhoid Prophylactic, 20 c.c. bottle.

Parke, Davis & Co.
- Scarlet Fever Streptococcus Antitoxin Concentrated Globulin—P. D. & Co., 1 cc.

NEW AND NON-OFFICIAL REMEDIES.

Bacillus Acidophilus Culture (B. A. Culture).—A pure aqueous suspension of *Bacillus acidophilus*, marketed in vials containing about 120 c.c. It contains not less than one hundred million viable organisms (*B. acidophilus*) per c.c. at the time of sale. (For a discussion of the actions and uses of bacillus acidophilus preparations, see New and Non-official Remedies, 1926, p. 211, "Lactic Acid-Producing Organisms and Preparations"). B. B. Culture Laboratory, Inc., Yonkers, N. Y.

Psyllium Seed.—The seed of Plantago Psyllium and related species of Plantago. By virtue of its indigestibility and mucilaginous character, psyllium seed acts as a mild laxative.

Psyllium Seed—Richards.—A brand of psyllium seed—N. N. R. Richards, Inc., Glen Olden, Pa. (Jour. A. M. A., Nov. 6, 1926, p. 1559).

Ovarian Residue Soluble Extract—P. D. & Co.—A solution of an extract of desiccated beef and hog ovaries, from which the corpora lutea have been removed, in physiological solution of sodium chloride, each c.c. containing 0.04 Gm. of soluble extract. The actions and uses of ovary preparations are discussed in New and Non-official Remedies, 1926, p. 269. The product is marketed in 1 c.c. ampules. Parke, Davis & Co., Detroit.

Protein Extracts—Mulford.—For a discussion of the actions and uses, see "Allergic Protein Preparations" (New and Non-official Remedies, 1926, p. 36). In addition to the Protein Extracts, Mulford described in New and Non-official Remedies, 1926, p. 36, the following products, marketed in 5 c.c. vials containing 500 "protein units" per c.c., have been accepted: Butternut Protein Extract—Mulford; Cheese Protein Extract—Mulford; Cherry Protein Extract—Mulford; Cocoanut Protein Extract—Mulford; Crab Protein Extract—Mulford; Duck Feathers Protein Extract—Mulford; Garlic Protein Extract—Mulford; Ginger Protein Extract—Mulford; Goose Protein Extract—Mulford; Grape Protein Extract—Mulford; Grapefruit Protein Extract—Mulford; Haddock Protein Extract—Mulford; Halibut Protein Extract—Mulford; Herring Protein Extract—Mulford; Mustard Protein Extract—Mulford; Nutmeg Protein Extract—Mulford; Paprika Protein Extract—Mulford; Parsley Protein Extract—Mulford; Parsnip Protein Extract—Mulford; Peach Protein Extract—Mulford; Pear Protein Extract—Mulford; Pecan Protein Extract—Mulford; Pineapple Protein Extract—Mulford; Prune Protein Extract—Mulford; Raisin Protein Extract—Mulford; Shrimp Protein Extract—Mulford; Sole Protein Extract—Mulford; Tuna Fish Protein Extract—Mulford; Turnip Protein Extract—Mulford; Walnut (Black) Protein Extract—Mulford; also the following product marketed in 5 c.c. vials containing 250 "protein units" per c.c.: Duck Protein Extract—Mulford. H. K. Mulford Co., Philadelphia. (Jour. A. M. A., Nov. 20, 1926, p. 1743).

PROPAGANDA FOR REFORM

The Radioactivity of Natural Waters.—The presence of radioactivity in mineral waters was accepted by many as an explanation of the alleged clinical effects of such waters that had attained some reputation through their use medicinally for bathing or drinking. After careful consideration of the evidence now available, the Council on Pharmacy and Chemistry of the American Medical Association concluded not to accept any radium solution for internal use the dosage of which is less than 2 micrograms per day, or any radon (radium emanation) generator that yields less than 2 microcuries of radon during each twenty-four hours. It has been estimated that to obtain the dose of 2 micrograms by drinking 1 gallon of water, which is considerably more than most people drink in a day, the radioactivity of the water would have to be about 500 millimicrocuries per liter (a millimicrocurie is the radioactivity corresponding to one-billionth gram of radium). A government expert has recently pointed out that although many waters exhibit some radioactivity, the doses necessary to produce detectable effects could not be obtained by drinking reasonable quantities of one of the naturally radioactive spring waters; of most waters it would be necessary to drink from 100 to 1,000 gallons a day. The best evidence is to the effect that, up to this time, it has not been shown that the small amounts of radioactivity found in natural waters have any effect on the medicinal value of the waters. (Jour. A. M. A., Oct. 30, 1926, p. 1480).

Phosphates and Fatigue.—During the World War, astounding reports were circulated regarding the promotion of muscular activity and the prevention of fatigue in both man and animals through the administration of sodium phosphate. It was attempted, during the war, to increase the muscular efficiency of the German soldier by the oral administration of acid sodium phosphate in sublaxative doses with alleged favorable results. Experiments conducted by the U. S. Public Health Service indicate that the ingestion of acid sodium phosphate does not increase muscular efficiency, but that there is a feeling of well-being experienced by many who ingest the salt. This probably depends on its stimulating action on the intestinal tract, and is due in part to increased elimination of alimentary waste. Acid sodium phosphate (sodium biphosphate) is more pleasant to take than other saline laxatives and is positive in its effects; those subjects who were constipated felt the beneficial effects of this laxative. (Jour. A. M. A., Nov. 6, 1926, p. 1562).

More Misbranded Nostrums.—The following products have been the subject of prosecution by the federal authorities charged with the enforcement of the Food and Drugs Act: Gordon's Antiseptic (G. M. Gordon Drug Co.), consisting essentially of bismuth subgallate, magnesium oxide, charcoal, glycerin, water and a trace of carbolic acid. Bear's Emulsion (John D. Bear), consisting essentially of mineral oil, sodium phosphate, potassium phosphate, gum, alcohol and water. Milam (Perry Drug Co.), consisting of extracts of plant drugs, nitric

acid, salicylic acid and water. Bull's Cough Syrup (A. C. Meyer & Co.), consisting essentially of ammonium chloride, extracts of plant drugs (including ipecac), alcohol, sugar and water. (Jour. A. M. A., Nov. 6, 1926, p. 1577).

"Elfin Fat Reducing Gum Drops" and "Slend's Fat Reducing Gum."—The quacks who prey on women who are overweight or who have convinced themselves that they are overweight, have done a thriving business in the past few years. Fortunes have been made in the sale of nostrums, most of which are utterly worthless, and a few of which are distinctly dangerous, sold for their alleged anti-fat properties. Elfin Fat Reducing Gum Drops, described as "The Chew and Grow Thin Treatment," are marketed by Pep-Giving Products Co., Inc., New York City. With the trade package come certain diet directions which alone, if followed, might result in a loss of weight. The A. M. A. Chemical Laboratory analyzed the preparation and reported that it was a "gum-drop" coated with varying amounts of a mixture containing essentially sucrose and phenolphthalein flavored with peppermint. The average amount of phenolphthalein was 1.4 grains to each "gum-drop." "Slend's Fat Reducing Chewing Gum" is put on the market either by Slends, Inc., or by Heath Products, Inc., New York City. It is claimed that the preparation contains absolutely no thyroid or any other harmful ingredient and that it can safely be given to children. At the same time it is admitted that the drug that is used in the product is extract of poke-root, while the trade package admits the presence of phenolphthalein. From its analysis, the A. M. A. Chemical Laboratory concluded that each piece of Slends is a piece of chewing gum (chicle) coated with varying amounts of a mixture containing essentially sucrose and phenolphthalein, flavored and containing a small amount of vegetable extractives. The average amount of phenolphthalein was 1 grain to each piece. From the analysis it appears that if extract of phytolacca is present, the amount is insignificant. While phytolacca has long been used in fake obesity cures, in almost every instance it is found to be present in such small quantities as to produce no physiologic effect whatever. (Jour. A. M. A., Nov. 13, 1926, p. 1665).

Scarlet Fever Toxin.—Nicolle, Conseil and Durand, in Tunis, have recently described the development of scarlet fever in a person inoculated with the fourth subculture of a streptococcus isolated from the throat of a scarlet fever patient. This work is regarded by the investigators as confirmatory of the discovery by the Dicks that a specific streptococcus is the cause of scarlet fever. It emphasizes also the value of the later report of the Dicks of the intradermal injection of streptococcus toxin, the "Dick Test," as a means of determining susceptibility to scarlet fever. (Jour. A. M. A., Nov. 20, 1926, p. 1746).

"Pabst Extract—The 'Best' Tonic," Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that Pabst Extract—The "Best" Tonic, is claimed to be "pure extraction of malt, properly flavored and combined with hops and is preserved by no other means than pasteurization." The preparation is stated to contain alcohol, by volume, 3.70 per cent, and 1.45 Gm. of hops are used for the preparation of 12 fluid ounces of "tonic." The Council found Pabst Extract—The "Best" Tonic unacceptable for New and Non-official Remedies because (1) the name does not indicate the potent constituents—malt and hops—of the mixture; (2) the claim "The 'Best' Tonic" is not warranted; (3) the therapeutic claims are unwarranted; and (4) it is sold to the public with claims that tend to its indiscriminate and ill-advised use. (Jour. A. M. A., Nov. 20, 1926, p. 1760).

Hoyt's Protein Cereal Omitted from N. N. R.—Hoyt's Protein Cereal is a preparation of gluten in the form of flakes containing protein, 78 per cent; fat, 1 per cent, and starch, 4 per cent, which is manufactured by the Pure Gluten Food Co. (New and Non-official Remedies, 1926). The Council on Pharmacy and Chemistry reports that objection was made to the claims made for this product in 1925. In June, 1926, the Council received a circular containing misleading and unwarranted claims essentially similar to those to which objection had been made previously; therefore, the Council rescinded its acceptance of Hoyt's Protein Cereal and directed its omission from New and Non-official Remedies. (Jour. A. M. A., Nov. 20, 1926, p. 1760).

More Misbranded Nostrums.—The following products have been the subject of prosecution by the federal authorities charged with the enforcement of the Food and Drugs Act: Nau's Dyspepsia Remedy (Frank Nau), consisting of a liquid composed essentially of extracts of plant drugs, including golden seal and licorice, glycerin, alcohol and water, and of tablets composed essentially of bismuth subnitrate, cane sugar, and milk sugar, flavored with ginger and peppermint oil. Angelus Beef, Iron and Wine (The Brunswig Drug Company, of Los Angeles), composed of meat extract, iron salts, potassium bitartrate, sugar, alcohol and water. (Jour. A. M. A., Nov. 20, 1926, p. 1761.)

Goiter Prophylaxis Where the Incidence of Goiter is Low.—A recent survey of goiter in Connecticut, by experts of the United States Public Health Service, indicates that the situation there is one that, in the opinion of the government consultants, does not call for the institution of state-wide goiter prophylaxis through the use of iodized water supplies, iodized table salt, or wholesale distribution of tablets containing iodine. The surgeons of the United States Public Health Service believe that prophylactic measures should be carried out among girls between the ages of eleven and sixteen years, under the direction of local health authorities, guided and assisted by the state department of health and the local medical practitioners. The prophylactic methods chosen appear to be immaterial provided there is skilled supervision, low dosage of iodine, regularity and economy of administration. (Jour. A. M. A., Nov. 27, 1926, p. 1832).

Free Breath.—This is exploited by O. W. Dean Co., Inc., Benton Harbor, Mich., as "The World's Wonder Treatment for Asthma, Bronchitis, Hay Fever and Catarrh of the Mucous Membranes" The advertisements for this nostrum stress the fact that asthma sufferers can try "Free Breath without cost." Those who receive the sample are then importuned to order the "complete treatment"—price $18. Practically every "patent medicine" sold for the alleged cure of asthma contains either potassium iodide, Fowler's solution, or both, and when analysed in the A. M. A. Chemical Laboratory, the preparation was found to consist essentially of 7 Gm. of potassium iodide and 0.05 Gm. of arsenic trioxide in 100 c.c. This is equivalent approximately to 21 grains of potassium iodide and 24 minims of solution of potassium arsenite per fluid ounce. (Jour. A. M. A., Nov. 27, 1926, p. 1847).

Virginia Medical Monthly

FOUNDED BY LANDON B. EDWARDS, M. D., APRIL, 1874.
OWNED BY THE MEDICAL SOCIETY OF VIRGINIA.
PUBLISHED BY THE PUBLISHING COMMITTEE.

A. G. BROWN, Jr., M. D., Chairman, Richmond, Va.
B. R. TUCKER, M. D., Richmond, Va.
P. W. HOWLE, M. D., Richmond, Va.
E. L. KENDIG, M. D. Victoria, Va.
A. L. GRAY, M. D., Richmond, Va.

ALEX. G. BROWN, Jr., M. D.,
Editor.
AGNES V. EDWARDS,
Business Manager and Secretary-Treasurer.

All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $2.00 per annum in advance.
Single Copies 20c.

VOL. 53. JANUARY, 1927 No. 10

Editorial

Medical History.

A recent editorial in the *Journal of the American Medical Association* closes with the following significant sentence, "The mark of the cultured man is a knowledge of the foundation and processes by which his art and his science reached their prestige. Unfortunately, too few physicians care to give the time or the interest necessary for even a moderate acquaintanceship with medical beginnings."

Such a comment, emanating from the editorial rooms of a national medical publication that has, during the past twenty-five years, done so much to raise new standards in medical education, and done so much to increase the prestige of American medicine as an art and science, emphasizes the importance that medical history plays in medical education and the culture of the medical man. It is worthy of note, also, that national medical organizations of today, as well as foremost medical schools of this and foreign countries, are setting up definite programs in their respective fields for the promulgation of the study of history of medicine and of medical men of the past.

Instances of this are today to be noted in the coming meeting of the British Medical Association, which will occur in Edinburgh, July, 1927. During the session of this national association, a special program has been laid out for observation of historic events in medical history. In that old medical institution, the University of Edinburgh, where especially so many of our Virginia medical forefathers were educated, before the days of Rush and Shippen, at Philadelphia, and where for more than two hundred years England and Scotland have educated so many eminent physicians, the history of medicine for the last twenty years has been a full-time subject. Since 1906 this institution has taught medical history as a definite course in its curriculum. Also, in this country, recently, the Johns Hopkins University Medical School, recognizing the need of such a course, has called away from the tasks of scientific and pathologic teaching, one of America's foremost teachers and set him up as the first full-time professor of the history of medicine in this country. It is well known, the work of Dr. William H. Welch; his distinguished career as an educator and a pathologist needs no comment here; and as professor of history at Johns Hopkins, his career will in no wise diminish.

It is obvious that medical history is about to receive a larger interest in the scheme of medical education of today. The prestige of this learned profession owes much to its past. The big and heroic men of the remote past in medicine have done a major part in the pioneer fields of medical discovery, while laboratory workers, scientists, clinicians, foundations, commissions, expeditions, and investigators, groups and individuals, have piled up "a world" of new discoveries in the arts and sciences of medical learning during the past quarter of a century. So tremendous and voluminous has become the mere recording of these observations and advances that the publications of medical knowledge or findings have become immeasurable. May it not be well, for the time at least, to call a bit of halt for the purpose of some assembly and stock taking of what we have and of what is suggestive? Is not the call for a study of the large view of the medical past one step toward securing a larger and wider view of medical diseases and toward surveying more critically the assembled knowledge of today, gleaned by the activities of medical workers in many fields during the past quarter of a century?

The Last Illness of General George Washington.

Virginians find an abiding interest in biographical accounts of the life of George Washington. Every new portrayal of this foremost

figure in American history receives a wide reading the nation over, as well as a liberal comment in the secular press. Recent productions by lay writers, which partake of a sort of de-mything treatment of the subject, have not met with universally favorable criticism. Recent biographers of Washington, appearing to be unwilling to retain a pictorial description, brought down in American historical literature, have attempted to "humanize" Washington. But, it is feared in bringing out the new data, to disprove the super-human features of the Weems-Sparks Washington, they have emphasized unduly their newly discovered material. The Washington of John Marshall, Washington Irving, Theodore Roosevelt, Woodrow Wilson, Cabot Lodge, Thayer and others, they have defaced by demything the Washington of Weems and Sparks.

All this present treatment of this great American statesman stimulates, however, a renewal of interest in Woshington the country over. The discussion of Washington's last illness also has been a subject of much interest in the past. There have been favorable and unfavorable comments made upon the treatment this distinguished patient received in his last illness. It is, hence, quite timely that the VIRGINIA MEDICAL MONTHLY presents to its readers a paper dealing with this important event in American history. Dr. W. A. Wells, of Washington City, has done a praiseworthy thing in bringing together historical data connected with General Washington's last illness. The paper deserves, and no doubt will receive, on the part of our Virginia medical readers, appreciative consideration.

Postmortem Examination of the Body of General Napoleon Bonaparte.

"* * * at two o'clock P. M. the English medical men, Short, Arnott, Mitchell, Burton and Livingston joined Dr. Antommarchi; the latter proceeded to the examination.

"The following observations* were made:

"1. The exterior convex surface of the left lung adhering at different points to the corresponding costal pleura.

"2. About three ounces of lymphatic humour in the bag of the left costal pleura.

"3. About eight ounces of the same lymphatic liquid in the bag of the right costal pleura.

"4. The lungs in a natural shape.

"5. The heart in a good state, enveloped in its pericardium and covered with a little fat.

"6. The stomach, intestines, liver, spleen, and large omentum in the natural places.

"7. The upper convex surface of the left lobe of the liver adhering to the corresponding part of the concave surface of the diaphragm.

"8. The interior concave surface of the lobe strongly adhering to the bare surface and to the small curve of the stomach, as well as the little omentum.

"9. Having carefully detached, partly with scalpel and partly with fingers, the said adhesions, I observed that the adherence of the concave surface of the left lobe of the liver formed a hole of about three lines in diameter in the fore-surface of the stomach, nearly at its right extremity.

"10. Having opened the stomach behind its large curve, I observed that it was partly filled with a liquid blackish substance, which had a sharp and disagreeable smell.

"11. Having removed the said liquid, I observed a very extended cancerous ulcer, which occupied particularly the upper part of its internal surface of the cardia to within an inch of the pylorus.

"12. On the edge of this ulcer, towards the pylorus, I perceived hole above mentioned (Art. 9) produced by an ulcerous corrosion of the partitions of the stomach.

"13. The ulcerous partitions of the stomach were considerably swelled and hardened.

"14. Between the ulcer and the pylorus, and contignous to the ulcer, I observed a scirrhous swelling and hardness of some lines in breadth, which circularly occupied the right extremity of the stomach.

"15. The liver was obstructed, and of an unnatural size.

"16. All the intestines were in good state, but filled with air.

FRANCOIS ANTOMMARCHI.

Longwood, May 8, 1821."

Last Illness of Alexander.

"On the eighteenth of the month Daesius, finding the fever upon him, he lay in his bathroom. The next day, after he had bathed, he removed into his own chamber, and played many hours with Medius at dice. In the evening he bathed again, and after having sacrificed to the gods, he ate his supper. In the night his fever returned. The twentieth he also bathed, and, after the customary sacrifice.

*History of the Captivity of Napoleon at St. Helena, by Montholon

sat in the bathroom and diverted himself with having Nearchus tell the story of his voyage, and all that was observable with respect to the ocean. The twenty-first was spent in like manner. The fever increased and he had a bad night. The twenty-second the fever was violent. He ordered his bed removed and placed by the great bath. Then he talked with his generals about vacancies in his army, and desired they might be filled up with experienced officers. The twenty-fourth he was much worse. He chose, however, to be assisted at the sacrifice. He likewise gave orders that the principal officers of the army should wait in the court, and the others keep watch all night without. The twenty-fifth, he was removed to his palace, on the other side of the river, where he slept a little, but the fever did not abate and when his generals entered he was speechless. * * * The twenty-eighth, in the evening, he died."

"These particulars are taken almost word for word from his diary."—*Plutarch's Lives.*

Alkalosis.

The medical treatment of gastric ulcer by the milk-cream diet, with a follow-up alkalinization of the gastric contents, as brought forward by Sippy and others, has recently been called in question because of real or apparent dangers of alkalosis. It is possible, as pointed out by Hardt and Rivers, to bring about toxic manifestation in the administration of alkali treatment. Alkalosis may result from alkali medications as well as from chronic pyloric obstruction, resulting from cicatrization of ulceration or unsuccessful surgical work of the pyloric opening. The question of auto-intoxication from alkali treatment is one of importance and deserves understanding as a possibility by those called upon to use medical treatment of the stomach by this method. The degree of danger from alkalosis is relative and happily, in most instances may be recognized, and effective, corrective measures may be instituted without placing the life of the patient in very serious danger. Fortunately, it is now recognized that it is not necessary to bring about complete neutralization of free hydrochloric acid in order to conduct super-alimentation and healing. Some patients tolerate alkalis poorly and in such, caution is needed in administration. Fortunately, withdrawal of alkalis and substitution of fruit juices brings relief from a mild alkalosis. Readjustment of alkali to patients' tolerance enables them to "carry on" with medical therapy. This, of course, is not true for chronic obstruction. Mechanical structure demands surgical relief.

Those interested in the question, whether for or against alkali treatment, may find data presented by Jordan (*J. A. M. A.*, Vol. 87, No. 23, Page 1,906 and discussion following) in a recent paper suggestive. His paper considers whether or not alkalemia brought on by alkali treatment results in serious injury or danger to patients. From his study he concludes that in cases of gastric ulcer, treatment by large amounts of alkalis shows no untoward clinical symptoms. But it is deemed wise to utilize the minimum dosage of alkalis needed to neutralize gastric contents.

It is well to note clinical symptoms of alkalemia, such as excessive dryness of the mouth, and the throat, loss of appetite, nausea and vomiting, persistent headache, pruritus, mental depression, with loss of memory and energy.

Jordan adds that, with omission or diminution in the amount of alkalis given, there is immediate restoration of an acid base equilibrium and immediate relief of symptoms.

The President's Appeal.

Attention of our readers is called to an article in this issue of the VIRGINIA MEDICAL MONTHLY, page 647, from the pen of our president, Dr. Horsley. The medical profession in Virginia may well consider this communication; it undoubtedly presents well known facts and brings an appeal for co-operation. The activities of the Board of Health in its commendable record of successful work in Virginia has always had the support of the Medical Society of Virginia. No such achievement as has been attained could have been brought about without the co-operative action of the doctors throughout the State. While this spirit of cordial support has always characterized the profession, the Board of Health has, on its part, given the practitioners every assistance and consideration within its power and resources. Many are the lines of help thrown out to general practitioners by the Board of Health. Through the years this co-operation has been maintained without change. The officials of the Board enjoy the confidence of the rank and file of the medical practitioners.

So it is that the announcement contained

in the president's paper will doubtless be received with satisfaction and approval by practitioners throughout the State. No opposition can be imagined but every support should be given to the institution of preventive measures which have for their end reduction in the incidence of diphtheria. This disease was one of the most deadly a quarter of a century ago. Now its fatality is astonishingly small as the result of the use of diphtheria antitoxin. The co-operation of public health boards, under the general supervision of the State Board, in establishing early diagnosis, in furnishing antitoxin promptly, has brought about this salutary condition. The further step now proposed, to institute the administration of toxin-antitoxin as a preventive against the disease, can only receive the same support.

Practitioners should acquaint themselves, by a review of the literature of the subject, with the various steps followed in the development and use of toxin-antitoxin. They should be ready to give the treatment when the Board of Health says the word. Practitioners may easily familiarize themselves with simple technique and enter into the scheme of a State-wide stamping out of diphtheria.

News Notes

The American College of Physicians

Will hold its eleventh annual Clinical Session in Cleveland, Ohio, February 21-25, 1927. Dr. Alfred Stengel, of Philadelphia, is President of The College and Dr. John Phillips, of Cleveland, is the Chairman of the Program Committee. The program will be of unusual interest to Internists (including Neurologists, Pediatrists, Roentgenologists, Pathologists, Dermatologists, Psychiatrists and others engaged in the field of Internal Medicine). The Cleveland hospitals and the Western Reserve University will co-operate with The College in the presentation of the program. These programs constitute each year a post-graduate week on Internal Medicine of outstanding merit.

During the mornings, there will be clinics and demonstrations at the various hospitals and in the laboratories of the Western Reserve University; during the afternoons, papers on various medical topics will be delivered by local members of the profession and by members of The College from other parts of the United States and Canada; during the evenings, there will be formal addresses by distinguished guests, American or foreign, and by the President or other representatives of The College.

The American College of Physicians is a national organization in which Internists may find a common meeting ground for discussion of the special problems that concern them and through which the interests of Internal Medicine may have proper representation. Membership in this organization is limited to those in the field of Internal Medicine. While it is not a limited national society of specialists (mostly prominent medical teachers), it is not co-ordinal with large national or sectional organizations of physicians requiring no special professional qualifications. Its standards are high and many men of distinction in the profession are numbered among its members.

An invitation has been extended by The College to all qualified physicians and laboratory workers to attend the Cleveland Clinical Session. An attendance in excess of fifteen hundred is anticipated.

The John Horsley Memorial Prize in Surgery.

Announcement has been made that every thesis in competition for the John Horsley Memorial prize in surgery must be in the hands of the committee at the University of Virginia before February 1, 1927, in order to be considered for the award to be made next June.

This prize of $1,000 is to be awarded every two years by a committee of the medical faculty of the University for a thesis upon some subject in general surgery. It was established as a gift of Dr. J. Shelton Horsley, of Richmond, Va., a distinguished alumnus, as a memorial to his father, John Horsley, of Nelson County, Virginia.

Dr. Horsley, who established the prize to stimulate interest in the scientific aspects of surgery, is an alumnus of the University of the class of '92. He was recently elected president of the Medical Society of Virginia and also of the Southern Medical Association.

All graduates of the medical department of the University of Virginia, of not more than fifteen years' standing, are eligible for the prize which should be on some surgical problem, the solution of which depends mainly or solely upon research work, preferably original.

The first award will be made next June in

connection with the graduating exercises of the class of 1927.

History of Medicine Comes Into Its Own.

Johns Hopkins University, Baltimore, has established a department of history of medicine, the first full-time chair of its kind in this country. A grant of $200,000 from the General Education Board of the Rockefeller Foundation made this possible. Dr. William H. Welch, for the past ten years director of the School of Hygiene and Public Health at Johns Hopkins, has accepted the professorship of this new chair.

Dr. and Mrs. Hunter H. McGuire,

Winchester, Va., recently visited Philadelphia, where Dr. McGuire went to attend a meeting of the Philadelphia Academy of Medicine.

The Southern Surgical Association,

At its annual meeting recently held at Biloxi, Miss., selected Augusta, Ga., as its 1927 place of meeting and elected Dr. Guy L. Hunner, of Baltimore, Md., president. Other officers are: Drs. Harley R. Shands, of Jackson, Miss., and Lucius E. Burch, Nashville, Tenn., vice-presidents; Dr. Robert L. Payne, of Norfolk, Va., secretary; and Dr. Urban Maes, New Orleans, La., treasurer. Drs. C. Jeff Miller, New Orleans, James F. Mitchell, Washington, D. C., Le Grand Guerry, Columbia, S. C., Irvin Abell, Louisville, Ky., and Hubert A. Royster, Raleigh, N. C., were elected members of the Council.

Dr. and Mrs. R. S. Kyle,

Formerly of Galax, Va., moved the first of December to Big Stone Gap, Va., where Dr. Kyle is now practicing his profession.

Dr. Edward B. Broocks,

Of Washington, D. C., and an alumnus of the University of Virginia Medical School in '16, recently spent sometime at his former home in Chase City, Va., on account of the illness of his father.

The Annual Congress in Medical Education, Licensure and Hospitals

Will be held at the new Palmer Hotel, Chicago, February 14th and 15th. On Wednesday, February the 16th, the Federation of State Medical Boards will hold its annual meeting. This will be preceded on Tuesday evening by the annual dinner of the Federation. Interesting programs have been arranged for all three days.

Married.

Dr. Clay W. Evatt, Greenville, S. C., and Miss E. Naomi Gartrell, Richmond, Va., December 21. Dr. Evatt is a member of the class of '24, Medical College of Virginia, and later served an internship at St. Luke's Hospital, this city.

Dr. William Blair Hunter, Gastonia, N. C., and Miss Nancy Theresa Izard, of Richmond, Va., December 22.

Child Welfare in Greece.

The child welfare law adopted April 14, 1926, provides for the appointment of child-welfare commissions in cities and towns in Greece. Every city or town is required to provide funds for the maintenance of infants deprived of mother's care and for the women nursing them. Physicians or midwives attending births must report them within 24 hours. All births must be registered by the police and lists sent weekly to the local child welfare commission which must investigate and aid needy cases.

The Medical Society of the District of Columbia,

At its annual meeting, elected Dr. Charles S. White president for the year of 1927, and re-elected Dr. Coursen B. Conklin secretary.

Dr. Margaret P. Kuyk,

Richmond, was elected professor emeritus in the University of Richmond, when she resigned recently from active faculty duty.

Dr. Thomas Edward Jones,

Formerly of Sioux Falls, S. Dak., announces the opening of offices at 1112 Church Street, Lynchburg, Va., and that he will limit his practice to diseases of children. Dr. Jones is an alumnus of the University of Virginia, having graduated in medicine from that place in 1909.

Food and Teeth.

Nutrition is the most important factor in healthy teeth, Dr. Harold H. Mitchell, Director of School Hygiene, Fall River, Mass., points out. Dr. Mitchell states that prophylactic and dental-repair work will be necessary for a long time to come, if not always, but that good nutrition comes first in the dental program.

The American Association for the Study of Goiter

Will hold its annual clinical meeting at Philadelphia, Penn., January 31st and February 1st and 2nd.

An unusually high class scientific program has been secured by Doctor Emil Goetsch, of Brooklyn, New York, the president, and by Doctor Kerwin Kinard, of Kansas City, Missouri, corresponding secretary. Many of the big goiter men of the country have accepted places on the program.

The forenoons will be devoted to clinics at the University of Pennsylvania Hospital; the afternoons to the scientific sessions in the assembly room of the Bellevue-Stratford Hotel. All members of State Societies are most cordially invited.

Dr. and Mrs. Loren E. Cockrell,

Reedville, Va., were in Richmond, last month, having come to be with their son who was in a local hospital for an appendicitis operation.

Citation for the Award of the Sofie A. Nordoff-Jung Cancer Prize.

The Sofie A. Nordoff-Jung Prize for the best contribution in Cancer Research during the past year has been awarded to Dr. Otto Warburg, Director of the Department of Biology of the Kaiser Wilhelm Institute, Berlin-Dahlem. The award was made on the unanimous decision of the commission.

The novel methods of investigation, developed by Professor Warburg, have opened reliable channels for tests on the metabolism of surviving tissues under varying conditions. With a singular predetermination he has made available an abundance of valuable material through comparative experimentations on the processes of disintegration and oxydation of normal tissues and neoplasms. His biochemical attack on the cancer problem presages the most promising results.

Professors Borst, Doederlein, von Romberg, and Sauerbruch, all of the University of Munich, form the awarding commission.

Dr. Phil H. Neal,

Resident physician at Catawba Sanatorium, Va., for the past year and a half, left for New York City, January the 1st, to begin an appointment at the New York Eye and Ear Infirmary.

Accidents to Working Children in Illinois.

Only three out of nine children injured or killed in industrial accidents in the State of Illinois in August, 1926, had the right to work, according to the State department of labor. Six of these girls and boys were illegally employed, and as a result of their employment one boy 12 years old was killed, one boy lost his arm, and one girl lost four fingers at the middle joints. The three remaining children employed illegally received temporary injuries causing them to lose time from work. In addition to these nine accidents to working children under 16 years of age there were reported during August eighty-six industrial accidents to boys and girls of 16 and 17 years. One boy was killed and seven boys and four girls suffered permanent injuries.

During the following month nine accidents to working children under 16 were reported, four of them to children employed illegally. Such children do not come under the protection of the workmen's compensation law. Employers can not get insurance from any company for children illegally employed. The Labor Bulletin urges employers to obtain proper working certificates for their child employees.

Physicians on Health Board.

Drs. E. P. Gray and S. D. Craig, have been elected members of the City Health Board of Winston-Salem, N. C. This action was in accordance with an ordinance recently adopted providing for two representatives from Forsyth County Medical Association in accordance with request by that organization.

Dr. Allan M. Kimbrough,

Recently of Richmond, Va., is now in Yonkers, N. Y., where he is taking up special orthopedic work.

$100,000 Offered for Conquest of Cancer.

The American Society for the Control of Cancer announces that two prizes of $50,000 each have been offered by William Lawrence Saunders, of New York, for discoveries of the causation, prevention and cure of cancer. The offer was made on December 15, 1926, and will stand for three years. The donor expects to renew it, if necessary.

Mr. Saunders is Chairman of the Board of Directors of the Ingersoll-Rand Company, Director of the Federal Reserve Bank of New York and President of the United Engineering Company.

The decision upon which the awards will be made is to be reached by the American Society for the Control of Cancer and approved by the American Medical Association and the American College of Surgeons.

It is Mr. Saunders' idea that discoveries are

not always made by experts and that "through the lure of a reward this serious problem might be solved through the genius of a lay mind, by chemists or through unorganized medical sources."

The offer of Mr. Saunders to the American Society for the Control of Cancer has not yet been formally acted upon by the Society, and it is impossible to say at this time what rules other than those proposed by Mr. Saunders will control the decisions. Information as to how persons who wish to present their discoveries for consideration should proceed will be announced later.

Mr. Saunders made his offer known through a letter to Dr. C. N. B. Camac, of New York, under date of December 13, 1926, and read by Dr. Camac at a dinner given in the interests of the American Society for the Control of Cancer by President Nicholas Murray Butler, of Columbia University, and Honorable Charles Evans Hughes.

Kenneth Hammer,

Youngest son of Dr. and Mrs. A. L. Hammer, of McGaheysville, Va., was run down by an automobile in the Fall, and suffered a fractured limb and other injuries. He is much improved now.

Dr. C. H. McFarlane,

Recently of Honaker, Va., is now located at Dunbar, Va.

The Seaboard Medical Association of Virgina and North Carolina

Had its usual interesting and pleasant sessions at its meeting in New Bern, N. C., last month, under the presidency of Dr. George A. Caton of that place. Officers elected for the 1927 meeting are: President, Dr. Beverley R. Kennon. Norfolk, Va.; vice-presidents, Dr. D. T. Tayloe, Jr., Washington, N. C., Dr. Frederick C. Rinker, Norfolk, Va., Dr. Ralph L. Daniels, New Bern, N. C., and Dr. J. Kennedy Corss, Newport News, Va.; treasurer, Dr. A. M. Burfoot, Fentress, Va., and secretary, Dr. Clarence Porter Jones, Newport News, Va. The next meeting is to be held in Norfolk, Va., beginning the first Tuesday in December.

Principal Causes of Death in 1925.

The U. S. Department of Commerce announces that 1,219,019 deaths occurred in 1925 within the death registration area of continental United States, representing a death rate of 11.8 per 1,000 population—the same as the 1924 rate. In 1925, the death registration area comprised 40 states, the District of Columbia, and 24 cities in non-registration states, with a total estimated population on July 1 of 103,108,000, or 89.4 of the estimated population of the United States.

The principal decreases in death rates in 1925 were from measles, pneumonia (all forms) and tuberculosis; the principal increases in rates were for influenza, diseases of the heart, nephritis and diarrhea and enteritis in children under two years of age.

Automobile fatalities also show an increase over previous years, the rate having steadily risen from 11.5 in 1921 to 18 8 per 100,000 population in 1925. During 1925 there was a total of 19,335 deaths due to automobile accidents in the registration area of the United States, 1,764 of which were due to collisions with streets cars and railroad trains.

The Southside Virginia Medical Association

Held its last meeting for 1926 in Norfolk, on December 14th. A good attendance was present and all papers on the program were freely discussed and much enjoyed.

Dr. Wright Clarkson, Petersburg, was elected president, and Dr. R. L. Raiford, Sedley, was re-elected secretary-treasurer for the coming year. The next meeting is scheduled for the second Tuesday in March at Emporia.

Central State Hospital.

The fifty-sixth annual report of the Central State Hospital at Petersburg, Va., states that at the close of the fiscal year ending June 30, 192, there were 2,487 patients an the books of the institution, 2,282 in the hospital and 205 on furlough and escape. During the year there were 491 first admissions, 73 re-admissions, and 232 deaths. There were no serious epidemic or contagious diseases among the patients during this year and the health of patients was up to the average.

New Year Resolutions.

We all make them for they are based on hope. We should not allow ourselves to get in such ruts but that we may climb to higher and better things. This year we want better organization. Let's all "pull together" and, where there are no county or district societies, organize and arrange to have periodic meetings. To organize is "to arrange in interde-

pendent parts, each having a special function or relation with respect to the whole." Get the eligible doctors in your section together, and fall in line with other units to make the Medical Society of Virginia as strong as any in the Union.

Dr. Emanuel Wallerstein,

Richmond, announces the removal of his offices to 403 Professional Building, this city.

Commander Micajah Boland (M. C.), U. S. Navy,

Is now stationed at the Naval Operating Base, Hampton Roads, Virginia.

Erratum.

In our December issue, we announced the marriage of Dr. Smauel Bee Woodward, of National Soldiers Home, Va. By error, the name of the bride was given as Mrs. Margaret Wood Wilson. This should have been Miss Margaret Wood.

Dr. Frederick C. Miller,

For some years of Cobham, Va., has moved to Prospect, Ky.

Meat Proteins Enhance Food Value of Cereals.

Research conducted by the Bureau of Animal Industry, U. S. Department of Agriculture, shows the high supplemental value of meat in connection with vegetable proteins.

Feeding experiments with albino rats showed that the protein of beef enhances to a remarkable degree the nutritive value of protein in wheat, bolted wheat flour, corn meal, oatmeal, and rice. When each of the products named was the sole source of protein in the diet, beef was found to be much more efficient for promoting growth than an equivalent amount of protein in the form of wheat, wheat flour, oatmeal, or navy beans. But when combinations of equal parts of beef and vegetable protein—or even one part of beef and two parts of vegetable protein—were fed, the mixtures were practically as efficient for promoting growth as when beef protein alone was used, except in the case of navy beans and potatoes.

Briefly, the experiments show the high nutritive value of food combinations, including meat proteins. The progress of research concerning the food value, flavor, and palatability of meat receives special mention in the annual report of the Chief of the Bureau of Animal Industry, just published.

Scientists Study Sausage.

Although sausage constitutes an important part of the American diet, little has been done in the past to determine its nutritive value. Studies are now in progress in the Bureau of Animal Industry, United States Department of Agriculture, to determine the chemical composition, vitamin content, and biological values of the proteins of the more important kinds of sausage on the market. Up to the end of the fiscal year, as shown by the recent annual report of the Bureau, 82 samples of sausage had been analyzed. The determination of the vitamin and protein values is in progress.

Nursing Education at University of California.

A chair of nursing education has been established in the University of California, the new department opening with the new year. Instruction for teachers and administrators in schools of nursing will be correlated with other departments of the university. The endowment was furnished from registration fees paid by California nurses and was made at their request.

Memorial Services for Dr. John W. Brodnax,

Who died in October, after a service of thirty-three years in the department of anatomy of the Medical College of Virginia, were held in the College Building on January 7th, at which time papers were read on the work of Dr. Brodnax as a doctor, artist and teacher.

Dr. Luther W. Kelly,

An alumnus of the University of Virginia, Department of Medicine, in the class of '24, after a couple of years at the Boston (Mass.) City Hospital, recently located in Charlotte, N. C., where he is specializing in internal medicine.

Dr. William Bradley Coley,

Of New York City, spent some time in December duck hunting in Virginia. When he stopped in Richmond, he was entertained at a small reception to which a number of the local profession were invited.

The Tri-State Medical Association of the Carolinas and Virginia

Will hold its annual meeting in Columbia, S. C., February 15th and 16th, under the presidency of Dr. A. J. Crowell, of Charlotte, N. C. Dr. James K. Hall, Richmond, is secretary.

An attractive meeting, scientifically and socially, is being arranged and a large attendance is expected.

Diphtheria Can be Eradicated

Is a statement made by the Department of Health of New York State. If it can be done there, why not in all states? We confidently expect the same thing to be accomplished in Virginia as a result of the co-operation of all our doctors with our efficient State Board of Health. New York State announces that less than 700 persons died from diphtheria in that state in 1926, as compared with 6,500 in 1888. Toxin-antitoxin, if used soon enough, can as surely eradicate diphtheria as has vaccination lessened smallpox.

Chi Zeta Chi Medical Fraternity.

More than a hundred members attended the annual convention of this fraternity in Richmond, the latter part of December and a great deal of pleasant entertaining was done for the visitors. Dr. Turner S. Shelton, of this city, was re-elected supreme master for the coming year, and St. Louis, Mo., was selected as the 1927 place of meeting.

Dr. and Mrs. H. L. Segar,

Of Warsaw, Va., went to Baltimore, the middle of December, where Dr. Segar underwent an operation at Johns Hopkins Hospital.

Annual Report of the U. S. Public Health Service.

The annual report of the Surgeon General of the U. S. Public Health Service for the fiscal year ended June 30, 1926, for its one hundred and twenty-eighth year, shows a large amount of work accomplished. From the large number of fields covered, it is apparent not only that the responsibilities of health officers —Federal, State, and local—are increasing, but also that knowledge of disease and the methods by which it can be prevented are advancing to meet the exigencies. In general the report shows favorable health conditions throughout the United States and a lowered mortality and morbidity rate in a number of diseases.

It is brought out that a phase of the work which needs development is official local health service in rural districts. During the year reported, work to establish full-time County Health Service was carried out in eighty-nine counties in twenty states. In this and other health work, the Service will co-operate with State Health Officers throughout the country.

Dr. and Mrs. Otis Marshall,

Culpeper, Va., recently visited in Philadelphia and Wilmington, Del.

Dr. J. B. Stone

Has been elected one of the vice-presidents of the Civitan Club of Richmond, for the coming year.

The Annual Report of the Surgeon General of the U. S. Navy

Gives the usual intresting tabulations as to the medical and dental work in the Navy. During the year ending June 30, 1926, there were forty-five new medical officers commissioned, forty-one of whom are internes; fifty-five have been separated from the service. This leaves a total of 814 medical officers of all grades in the Service. The annual physical examination of officers of the Navy and Marine Corps showed 38.72 per cent of officers on the active list with one or more defects, some of which were such slight deviations from normal as hardly to be regarded as defects in the true sense of the word. The most frequent deviation from normal was the error of refraction. The downward trend of sickness and death rates which has been reported in recent years appears to be continuing.

The Rockefeller Foundation Annual Report

For 1925 shows that $9,113,730 was expended through its departmental agencies, the International Health Board, the China Medical Board, the Division of Medical Education, and the Division of Studies. The work of the Foundation has been scattered on all the continents and has been so diversified that the report reads like an interesting story.

Dr. Gladys Smithwick,

Of the class of '25, Medical College of Virginia, recently of Roanoke, Va., has been appointed a medical missionary to China, by the Southern Presbyterian Church. She will sail February 26th from San Francisco for Suchowfu, Ku, China, where she will be connected with the Mary Irvin Rogers Memorial Hospital.

Dr. James T. Walker,

Gordonsville, Va., after recovering from a fractured leg, spent sometime in West Virginia. He has now resumed his practice in Gordonsville.

Dr. Charles R. Irving,

Of Buckingham County, Va., has gone to Saltville, Va., and will be connected with the hospital in that place.

"Medical Extension Service."

The University of Arkansas Radiophone Station KUOA, believing that a radio station should endeavor to broadcast programs of an educational nature as well as those of, by, and for entertainment features, announces that it has inaugurated a special weekly feature under the direction of Dr. Allan A. Gilbert, University physician, which will me known as "Medical Extension Service." Every Thursday evening at 8 o'clock, a special paper on medicine or surgery (and allied subjects) will be radiophoned from this station for the benefit of the physicians in the surrounding communities, who are urged to tune in at the same time. These papers will be prepared especially for the Extension Service and will be written by outstanding men in the medical profession in the United States. The papers will be somewhat of a technical nature, but they will furnish something of interest for the layman as well.

Dr. W. W. McChesney,

Who has practiced for sometime in Abingdon, Va., has moved to Gastonia, N. C., where he will continue the practice of his profession.

Dr. Edward Sandidge,

Of Amherst, Va., underwent an operation for appendicitis at University Hospital, University, Va., the latter part of December.

Housing Influences Infant Mortality in England.

The larger and more comfortable the family house, all other things being equal, the better chance babies have to live, says the recently published annual report from Newcastle-upon-Tyne, which appears in the *Maternity and Child Welfare*, of London, for November. In one-room dwellings, in Newcastle-upon-Tyne, in 1925, the death rate was 108; in two-room dwellings, 106; in three-rooms, 89; while in those over three rooms, it dropped to 76.

The U. S. Civil Service Commission,

Washington, D. C., announce open competitive examination for Dietitian, applications to be rated as received until June 30, 1927. The examination is to fill vacancies in the Public Health Service and the Veterans' Bureau throughout the United States.

Dr. Herbert R. Edwards,

Formerly connected with the Virginia State Board of Health but for nearly three years medical field secretary with the National Tuberculosis Association, has been granted a leave of absence to participate in a comprehensive survey of Indians affairs which is to be carried on by the Institution for Government Research, of Washington, D. C.

Wanted—

Position by laboratory technician, either in hospital or doctor's office. Am an undergraduate nurse and stenographer. References. Address "M. J.", *care this Journal.* (Adv.)

For Sale—

$7,000 practice and office equipment in one of the best towns of Virginia. Fifteen hundren inhabitants, good surrounding country, all improved roads. Can use car entire year. Competition right, one other physician. Best offices in town. Part good contract practice. Considering moving to city if I can dispose of above to good man. Do not reply unless you mean business and want good field. (Address "Doctor", care VIRGINIA MEDICAL MONTHLY. (Adv.)

Miss Rose Zimmern Van Vort,

Expert hospital executive and efficient business manager, available for position February 1st. Reorganization of hospitals and nursing schools a specialty. Address care "Central Nurses Club, 132 East 45th Street, New York, N. Y. (Adv.)

Obituary

Dr. Andrew Mason Brent,

Of Heathsville, Va , died at his home in that place, December 24th, following an illness of only a few days. He was seventy years of age and had lived practically all of his life in that section, and had been active as a physician and in the promotion of education in his community. He is survived by his wife and five children, one them being Dr. Meade S. Brent, of Petersburg, Va.

Dr. James Stretch,

A graduate of the University College of Medicine. Richmond, Va., in the class of 1901, died at his home in Simsbury, Conn., November the 19th, following a long illness. He was sixty-six years of age.

PARKE, DAVIS AND COMPANY

ARE ALL PITUITARY EXTRACTS ALIKE?

THE U. S. Pharmacopeia and the Geneva Conference of the League of Nations have respectively set American and International standards for the activity of pituitary extracts. Heretofore each manufacturer adopted standards of his own, with the result that some extracts were dangerously strong and others extremely weak and inadequate for their purpose.

It is naturally a source of much gratification to us to be able to point out that both the U. S. P. and the International standards are the exact equivalent of the standard that we have maintained for many years for our obstetrical Pituitrin.

While this official intervention will end the intolerable lack of uniformity in the *potency* of pituitary extracts, it does not by any means affect the wide discrepancies that have existed, and still do exist, in the matter of the *purity* of those extracts.

From the standpoint of purity, Pituitrin, the Parke, Davis & Co. product, the pioneer in the field, is still far in the lead. *It contains less total solids and less protein matter than any other pituitary extract we have been able to procure in the open market and subject to examination in our laboratories.*

There is a practical significance in this unequaled purity of Pituitrin that is bound to appeal to the discriminating physician:

It has such keeping qualities that dating of the package is not necessary.

Its stability is such that long continued boiling will not destroy its activity.

Injection is practically painless because, on account of its purity, it does not require an excessive quantity of acid for its preservation.

It is free from soluble impurities of the histamine type.

The risk of anaphylactic reaction is extremely remote.

In color it is practically "water white."

PARKE, DAVIS & COMPANY

DETROIT, MICHIGAN

PITUITRIN IS INCLUDED IN N. N. R. BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION

Capital $1,000,000 Surplus Earned $1,500,000

ESTABLISHED 1892

To act as Executor, Guardian and Trustee

$30,000,000

of investments held in Trust

Confidential Interviews Invited.

NEW YORK EYE AND EAR INFIRMARY

2nd Ave., Corner 13th Street, New York, N. Y.

SPECIAL COURSES OF POST GRADUATE INSTRUCTION IN

Operative Surgery of the Eye and Ear
Refraction
Muscle Anomalies
Ophthalmoscopy
Anatomy of the Ear
External Eye Diseases
Functional Testing of the Eye
Minor Otology
Histology

Address WEBB W. WEEKS, M. D., *Secretary.*

THE NEW YORK POLYCLINIC MEDICAL SCHOOL AND HOSPITAL

(Organized 1881)

(The Pioneer Post-Graduate Medical Institution in America)

WE ANNOUNCE

A COMBINED COURSE COMPRISING

EYE, EAR, NOSE and THROAT

For Information Address

EXECUTIVE OFFICER, 345 West 50th Street, New York City

THE N. Y. ACADEMY OF MEDICINE
FEB 15 1927
LIBRARY

Virginia Medical Monthly

OFFICIAL ORGAN OF THE MEDICAL SOCIETY OF VIRGINIA

Vol. 53, No. 11.
WHOLE No. 896.

RICHMOND, VA., FEBRUARY, 1927

$2.00 A YEAR
20 CENTS A COPY

CONTENTS.

Kidney Tumors—Report of Cases. John H. Neff, M. D., University, Va. ---- 701
Correlation of Lesions of the Genitalia. T. Latane Driscoll, M. D., Richmond, Va. ---- 704
The Blood in Scarlet Fever. Janvier W. Lindsay, A. B., M. D., E. Clarence Rice, M. D., Maurice A. Selinger, M. D., Washington, D. C. ---- 709
Tumors of the Breast With Special Reference to Their Diagnosis and Treatment. J. Shelton Horsley, M. D., Richmond, Va. ---- 713
Gynecology for the General Practitioner. Southgate Leigh, M. D., F. A. C. S., Norfolk, Va. ---- 719
Aseptic Intestinal Resection—Report of Cases. Carrington Williams, M. D., F. A. C. S., McQuire Clinic, Richmond, Va. ---- 722
The Roentgen Ray Treatment of Skin Cancer and Allied Conditions. Fred M. Hodges, M. D., Richmond, Va. ---- 727
Exercises and Posture in Relation to Disease. Custis Lee Hall, M. D., Washington, D. C. ---- 729
The Etiology and Treatment of Diarrhoeas of Infancy. Jas. W. Reed, M. D., Norfolk, Va. ---- 732
Orthopedic Surgery as Applied to the Cripple Child. Bernard H. Kyle, B. S., M. D., F. A. C. S., Lynchburg, Va. ---- 735
Hunner's Ulcer. James M. Fadeley, M. D., Washington, D. C. ---- 737
MISCELLANEOUS ---- 740
ANALYSES, SELECTIONS, ETC. ---- 741
BIBLIOTHECA OBSTETRICA ---- 743
CORRESPONDENCE ---- 745
PROCEEDINGS OF SOCIETIES ---- 746
WOMAN'S AUXILIARY MEDICAL SOCIETY OF VIRGINIA ---- 747
THE TRUTH ABOUT MEDICINE ---- 748
BOOK ANNOUNCEMENTS ---- 750
EDITORIAL ---- 751
NEWS NOTES ---- 754
OBITUARY ---- 760

INDEX OF ADVERTISERS—Advertising Page 5.

Calcreose

FOR BRONCHITIS AND TUBERCULOSIS

At this season when coughs and colds are prevalent it is well to guard against their more serious consequences.
In Calcreose you have a remedy that furnishes the full stimulant expectorant action of creosote without the disturbing effect of plain creosote.
Calcreose represents about 50% creosote in tablet form. It is easily administered and is particularly suitable as an adjunct to other remedial measures.

POWDER ::: TABLETS ::: SOLUTION

Samples of Tablets on Request

THE MALTBIE CHEMICAL COMPANY
NEWARK, N. J. : *Manufacturers of Pharmaceutical Products*

Complete Catalogue on Request

INFANT DIET MEAD'S MATERIALS

There is a

Measure of Safety

in the use of

MEAD'S DEXTRI-MALTOSE

IN

INFANT DIETS

because it can usually be fed in sufficient quantities to assure a satisfactory gain in weight when the ingestion by the infant of a like amount of other sugars would, in many instances, be attended with fermentative diarrhoea or other nutritional disorders.

Samples of Dextri-Maltose and a feeding calculator gladly sent to physicians on request.

The Mead Johnson Policy

MEAD'S Infant Diet Materials are advertised only to physicians. No feeding directions accompany trade packages. Information in regard to feeding is supplied to the mother by written instructions from her doctor, who changes the feeding from time to time to meet the nutritional requirements of the growing infant. Literature furnished only to physicians.

MEAD JOHNSON & COMPANY

EVANSVILLE, INDIANA, U.S.A.

Manufacturers of Infant Diet Materials Exclusively

Virginia Medical Monthly

Official Organ of the Medical Society of Virginia

Vol. 53, No. 11.
WHOLE No. 896.

RICHMOND, VA., FEBRUARY, 1927

20 CENTS A COPY
$2.00 A YEAR

KIDNEY TUMORS—REPORT OF CASES.*

By JOHN H. NEFF, M. D., University, Va.

This analysis is based upon twenty-five cases of renal tumor observed at the University Hospital during the past nineteen years. A few additional cases so diagnosed in our files are omitted because the recorded data, in the absence of any operation, do not allow the diagnosis with sufficient certainty. Two large solitary cysts are included in the series but polycystic kidneys are not.

The classification of these cases is shown in Table I.

TABLE I

FINAL DIAGNOSES

	Adults	*Children*	*Total*
Hypernephroma	10	1	11
Sarcoma	3	5	8
Carcinoma	1	0	1
Carcinoma Pelvis	1	0	1
Malignant Tumor	1	1	2
Solitary Cyst	2	0	2
	18	7	25

The diagnosis listed merely as malignant tumor was clearly warranted by the clinical findings in two patients whose very poor condition precluded any type of operation. The classification for ten of the group was made from the gross appearance of an inoperable tumor upon exploration or upon the gross appearance of the removed kidney.

The customary contrasting frequency of hypernephromata and sarcomata in adults and children is well shown. The sarcomata in children, with one exception, were seen ten or more years ago, and the gross specimens are not now available. It is quite probable that more thorough study of these tumors would have resulted in some diagnoses, at least, of mixed or embryonal tumors.

Large solitary cysts of the kidney are quite rare if one may judge from the infrequency of reports in the literature. It is unusual that there should have been two such cases in such a small series of renal tumors.

*From the Department of Urology and Proctology, University of Virginia.

Read before the fifty-seventh annual meeting of the Medical Society of Virginia, at Norfolk, Va., October 12-15, 1926.

TABLE II

PATIENTS ACCORDING TO AGE

9 to 31 Months	5
5 to 7 Years	2
45 to 55 Years	5
56 to 65 Years	7
66 to 76 Years	6

There were no cases between the ages of seven and forty-five. Slightly more than half of the cases occurred after the age of fifty-six. One solitary cyst was in the oldest patient, seventy-six, the other in the youngest adult, forty-five.

Table III lists all the initial symptoms in the order of their frequency and the later changes in their incidence prior to admission.

TABLE III

SYMPTOMS

Adult Patients:	*Original*	*Late*
Hematuria	5	11
Pain and Hematuria	4	0
Mass	3	7
Pain	3	10
Gastro-Intestinal	2	4
Weakness	1	0
Children:		
Mass	5	6
Weakness	1	0
Gastro-Intestinal	1	3
Pain	0	2
Hematuria	0	1

Hematuria was one of the first symptoms of malignancy in 55 per cent of the adult patients, and had developed in 70 per cent before they entered the hospital. The hemorrhages, as a rule, were quite sharp, lasted from a few days to several weeks, with intervening periods wherein the urine was grossly clear up to a maximum of twelve months. In three instances the resulting bladder clots were sufficient to precipitate or cause acute retention of urine. There was a history of hematuria in only one child, and that a late manifestation.

With one exception severe pain did not occur unless in association with hematuria. Five adults had renal colic as an accompaniment of hemorrhages. The pain was usually described as a dull dragging or drawing discomfort.

The first abnormality to attract attention in three adults and five children was the accidental palpation of a mass. Before admission a mass had been felt by patient, relative

or physician in thirteen of the twenty-five patients.

In two adults a more or less constant but inactive nausea and loss of appetite were the only symptoms. One was referred with a diagnosis of carcinoma of the stomach because of these symptoms and the demonstration of a filling defect of the stomach after a barium meal. The defect was caused by pressure from a left renal tumor. Both patients had lost much weight, neither presented apparent metastases, and both died after nephrectomy.

TABLE IV

DURATION OF SYMPTOMS PRIOR TO ADMISSION

	Patients
Adults	
12 to 30 Months	6
6 to 10 Months	6
1 to 5 Months	6
Children	
10 to 24 Weeks	3
2 to 8 Weeks	4

The time period in the table was figured from the appearance of the first symptom or sypmtoms. It throws a revealing light on the later table recording end-results.

It is needless to detail the physical findings in these cases. Insomuch as twenty-two of the twenty-five had an obvious mass upon admission, many showed the expected anemia, wasting and loss of strength. Metastases, other than those found at operation, were seen twice, once in the bladder and once under the right triceps muscle. Six of the patients operated upon had abdominal or retroperitoneal metastases. Two patients had a confusing heavy chronic pyelitis of the involved kidney.

In this series there were some instructive diagnostic experiences. Two types of error were made: one in mistaking, at the outset, some other urological finding as the cause of hematuria; the other in missing the diagnosis completely. There were two patients in each category.

Case 1. A man of sixty came in because of retention of urine associated with his first hematuria. Increasing nocturia and difficulty in urinating over three years culminated in the hemorrhage and retention. The bleeding promptly ceased after the placing of an indwelling catheter. General physical examination was negative. Cystoscopy revealed a benign prostatic hypertrophy. Convalescence was uneventful after a perineal prostatectomy. Three months later he had a sharp hemorrhage which proved to come from an advanced left hypernephroma. He was apparently well five years after nephrectomy.

Case 2. A man of sixty-one, first seen in 1918, complained of chronic difficulty in urinating, hematuria, mild right renal colic, chills and fever. The urine contained pus and blood. All examinations for stone were negative. Cystoscopy demostrated a definite median bar prostate, some pus from the left kidney, pus and old blood from the right. A right pyelogram was normal. After a prostatic punch operation, the obstruction was relieved anatomically and symptomatically. The bleeding was attributed to a chronic pyelitis. Only many months later did I wake up to the fact that repeated hemorrhages probably meant a renal tumor. This was promptly shown by pyelography and the differential functional test. An attempted nephrectomy had to be stopped because the patient went bad on the table.

Case 3. A woman of seventy-six, presented a large cystic mass, most prominent in the low mid-abdomen. The mass seemed quite typically an ovarian cyst. It proved to be a solitary cyst, approximately seventeen inches in diameter, largely replacing the right kidney. Death occurred five weeks after nephrectomy.

Case 4. Seemingly normal health in a boy of seven was suddenly interrupted, two weeks before admission, by severe cramps in the upper right abdomen and flank, active nausea, and elevation of temperature. Upon admission, his temperature was 101°, the leucocyte count 21,000, his urine negative. The right abdomen was rigid. A mass was palpable from the midline to the right flank, paralleling, and two inches below, the costal margin. There seemed to be slight bulging of the lower intercostal spaces. The right dome of the diaphragm was shown by the X-ray to be elevated about one and a half inches. A diagnosis of subphrenic abscess was made. Operation revealed old blood and blood clots in the abdominal cavity, the peritoneum eroded by a sarcoma of the right kidney, and the tumor extending up between the liver and the diaphragm. The boy died ten weeks after nephrectomy.

In reviewing the diagnostic studies for this series of cases, the inestimable value of pyelography and the differential functional test became immediately evident. A pyelogram was made in eleven cases and always gave definite evidence of the tumor. The departure from normal varied from mere displacement

of the pelvis or ureter, to the so-called fragmentation of the pelvic outline corresponding to the irregular invasion and destruction of the pelvis and calices. Needless to say, pyelograms must be interpreted with great care and with due regard for the other features of the case. In nine of ten cases there was a decrease of phthalein output upon the tumor side. The disproportion has matched quite accurately the amount of renal tissue thrown out of use by tumor invasion or by secondary obstruction to renal drainage. The earlier cases are seen, quite obviously, the less definite will be the aid from these two procedures. Only an optimistic cystoscopist, however, would expect to see many kidney tumor cases in which they too did not furnish the most valuable data for diagnosis.

TABLE V

Operations

		Deaths
Nephrectomy, Flank	4	2
Nephrectomy, Abdominal	9	2
Exploration, Inoperability	6	2
Cystectomy	1	0
	20	6

There was one hospital death in addition to those following operation. Autopsy in this instance showed an infected hypernephroma which had ulcerated into the stomach. Interestingly enough, the patient had no gastric symptoms and no elevation of temperature during twenty-four days in the hospital.

The operative experiences in these cases lead me to advocate an abdominal rather than a lumbar nephrectomy for any kidney tumor which is definitely palpable. A transperitoneal attack gives a better exposure, permits more thorough search for metastases, minimizes hemorrhage by allowing prompt control of the renal blood supply, and lessens the likelihood of dislodging tumor emboli into the circulation. This last advantage was vividly brought home to me some years ago. An original flank approach had to be abandoned for an abdominal one because of hemorrhage from large veins coursing over a hypernephroma. Upon the exposure of the renal pedicle from in front, an inch long tumor stalk was found extending into the renal vein. Had the operation been completed from behind I feel morally certain that I would have clamped across the tumor stalk in securing the renal vessels. This patient was alive and apparently well five years after operation. The value of intra-abdominal palpation for the recognition of metastases was well demonstrated in a recent patient. A lumbar nephrectomy was too far advanced to be stopped before extensive retro-peritoneal metastases were discovered and which rendered the nephrectomy worse than futile.

Nine patients were discharged after nephrectomy. Subsequent events are tabulated for eight of them.

TABLE VI

Late Results in Patients Discharged After Nephrectomy

Apparently well after 12 years	1
Apparently well after 5 years	2
Apparently well after 9 months	1
Death within 9 months	4
Not heard from	1
	9

The patient not heard from was an infant of seventeen months, operated upon for a very large sarcoma in 1916, and is almost certainly dead. The patient seemingly well after twelve years deserves a few words. The original nephrectomy for sarcoma was done in March, 1914, at the age of nine months. Five months later, the removal of a recurrence in the operative scar was undertaken to avoid probable ulceration. During the removal the abdomen was entered and a subjacent large retro-peritoneal recurrence also found. Both masses were removed and there has been no further recurrence up to the present time.

The gloomy figures of Table VI record the survival for five years after admission of only 13 per cent of the twenty-three cases of renal malignancy. The prime object of this analysis was to learn what suggestions statistical investigation would point out for heed if the report of a future series was to have a brighter ending. These suggestions readily form the conclusions of this discussion:

1. The opportunity for better results depends upon earlier diagnoses.

2. Prompt, thorough and, if necessary, repeated urological investigation should be given every patient with hematuria. Such practice offers the main chance for earlier diagnoses. Ten of our adult patients had had bleeding for an average of nine months before consulting a surgeon. That patient should be lucky whose kidney tumor causes bleeding early in its growth.

3. The pain of renal tumor will rarely of itself alone be sufficient to attract serious attention from the patient.

4. Whenever an abdominal mass is the first evidence of a renal tumor, diagnosis is of necessity late. Such is peculiarly true for infants and children, and is also true for some adults. Future operative results for this group will probably be no better than those of the present day.

5. Gastro-intestinal symptoms may be the only symptoms of renal malignancy.

6. The trans-peritoneal approach will permit a wiser selection of cases for nephrectomy than the lumbar approach and certainly for large tumors, allows a safer operation.

CORRELATION OF LESIONS OF THE GENITALIA.*

By T. LATANE DRISCOLL, M. D., Richmond, Va.
Associate in Syphilology, Medical College of Virginia.

It would seem upon superficial reflection that one would have but little trouble in making differential diagnoses in the case of genital lesions, since the average text-book emphasizes only a chancre, chancroid and herpetic vesicle, but I can say with reasonable force that such is not the case.

Of course, taking the literal translation of the word chancroid, all lesions that are not chancres, found in the usual locations, must perforce be chancroids. This is obviously a very simple classification, but, on the other hand, it is equally susceptible of false impressions. Indeed, what is a chancroid? This is the crux of the situation, since the recognition of syphilis is well-nigh standarized, but even this offers difficulties. Ordinarily this lesion is thought to be due to the bacillus of Ducrey. In my hands it is difficult to recognize.

I have sought to get an opinion, international in scope, as to the general idea of the role of this bacterium, by communicating with the larger clinics and Medical Colleges in America, and most of the authorities in the medical centers of Europe, with the following results: In Europe, 40 per cent of the inquiries were answered in the negative, while in America 60 per cent denied the specificity. This was a most interesting situation. How was it to be explained? There were two possible means, one that laboratory technique was defective, the other that what we call chancroids were in about one-half of the cases not chancroids at all. I personally wish to subscribe to the latter hypothesis.

Time has proven to my mind that we are constantly mistaking other lesions for chancroids, and, in view of the rapid strides made in the study of the bacteriology and clinical manifestations of these lesions, I feel that my position is safe when I say that the chancroid, as ordinarily visualized, is a relatively uncommon lesion.

To say that all of this is confusing in the diagnosis of these cases must be conceded, but, at the same time, it clears up many of our unresponsive cases, and perhaps throws a new light upon the study of this class of work. The fact that a patient has a genital lesion is quite sufficient, and the question resolves itself into the cure, if cure be possible. This in turn depends upon the recognition of the lesion, and automatically the information is had, within the scope of our present knowledge, as to whether or not it is transmissable, or venereal in origin.

The following lesions will be discussed in order of importance, and frequency. Let it be known, however, that this is not complete, as to go into all possible lesions would be to go into infinity.

The primary sore of syphilis is by far the most common of all genital lesions, constituting about 80 per cent of the whole. The typical chancre of the books does exist, we must concede, but, like other diseases, most are atypical according to my observation, varying from the slightest and most insignificant superficial lesion to a lesion several inches in diameter, with but few symptoms of this sore; and, in this connection, the author believes it is not amiss to assume all lesions as syphilis until definitely proven otherwise, either by laboratory exclusion, or later developments. A negative diagnosis of syphilis we believe to be the most difficult factor with which we deal. A chancre is often single, but may be multiple. A chancre is usually indurated, but not infrequently not palpably so. Usually the floor is smooth and glistening, but by some superimposed infection may discharge pus, and appear granulomatous. Incubation period is usually about 21 days, but cases have been recorded as soon as from 3 to 5 days. Edges are usually sloping, but may be irregular, and undermined; usually not painful, but, if other infection is present, is often exquisitely so. Bilateral lymphadenitis is usually present, but a great number of patients have this present without syphilis or other evident disease.

*Read before the fifty-seventh annual meeting of the Medical Society of Virginia, at Norfolk, Va., October 12-15, 1926.

The presence of Treponemata, positive serology, tissue section, with later developments, make our diagnosis positive.

A chancroid is an inflammatory, purulent, painful lesion, supposedly due to the bacillus of Ducrey, but in my experience the ordinary pyogenic organisms are always in such quantities as to quite consistently cause all of the symptoms, and whether or not the specific bacillus *per se* does, or is capable of causing this disease, remains to be seen after more work has been done. This lesion is ordinarily multiple, but may be single. Usually the edges are soft, but may be indurated, and generally are, after treatment. There is a great tendency to suppurative glands, that are often unilateral, but may be bi-lateral. There seems to be a definite period of incubation—around a week,—which is indicative of specificity when considered in conjunction with the ulcer that has the appearance of a worm eaten floor and irregular undermined edges. Finally, without concomitant constitutional manifestations, and with negative serology, negative dark field, and isolation of the specific bacillus, we may be sure of a diagnosis.

Herpes progenitalis consists in the development of vesicles upon reddened bases on the skin covering the gland or other portions of the neighboring skin, attended by a sensation of heat and burning. When vesicles develop on the preputial orifice, the epithelium of the vesicles is soaked off leaving ulcerations with a more or less general inflammation. The ulceration may become deep and angry, with more or less definite pain. This affection possesses a marked tendency to recurrence and is characterized by definite periodicity. A tight and contracted prepuce and irritating discharges are predisposing causes. The vesicles always precede the ulceration and are irregular in shape and superficial, and are not auto inoculable.

It is noted by Dillon that practically all malignant ulcers of the penis are epitheliomata and involve, primarily, the glans or mucous surface of a phimotic prepuce. It is stated that venereal warts, which are true epithelial outgrowths, are prone to malignant degeneration. We must conceive, however, that other malignant types do occur, as represented especially by Howze, Dean and Barringer. These lesions, upon usual examination, may be mistaken for some of the lesser venereal diseases, occurring, as they do, once in about two hundred lesions. In cancer, as observed by Dornbloser, there is marked infiltration of the edges, the floor and deeper tissues. The floor is rough and ragged and moderately deep. Gray degenerated spots dot the bright red surface. The edges are outlined and are ragged and hard. Very frequently the ulcer is found in the connective tissues of the labia or urinary meatus. Tissue sections must be made to clear up the diagnosis.

Tuberculous ulcer is most markedly infiltrated. The surface is flat and is covered with caseous material. Tubercles are seen on the floor and surrounding the ulcer. The base is a gray or greenish color. The edge is irregular and sometimes undermined, but mostly perpendicular, and the margin is infiltrated. Scarring is often seen on one side only. The ulcers are practically never primary, but are most frequently secondary to tuberculosis of some other portion of the body. The ulcer is usually single. Tuberculous ulcers are rare in adults and somewhat more common among children.

Welander reports twenty cases of ulcers about the genitalia occurring in virgins, with a striking resemblance to the primary lesions of syphilis and chancroids, with no history of exposure. Olson also reports a case with symptoms, as follows: Pain on walking, a gray rather sticky discharge, superficial ulcers, sharply circumscribed, depressed in the center and covered with discharge, with no areola, and not surrounded by inflammatory reaction. There was no induration and the inguinal glands were not enlarged; dark field was negative, as was also Ducrey's bacillus. The spirochete and fusiform bacillus were absent. The first symptom noted by the patient was one or more sores of the vulva. Lipschutz found in patients with these ulcers a gram positive bacillus resembling the bacillus subtilis, which he claims is the etiologic micro-organism. The ulcers were apparently not auto-inoculable.

Gumma of the genitalia begins as a subcutaneous nodule, the size of a pea or larger. At first it is not elevated, but can be felt as a firm painless induration beneath the skin. Ordinarily, when fully developed, they project above the skin, but when deep-seated or diffused, they may be without elevation. If the gumma is deep, there results a depressed ulcer. The border is sharp, indurated and firm. There is a secretion of gummy sero-purulent fluid mixed with particles of sloughing tis-

sue, which dries upon the surface with a dirty blackish crust. As a rule gummata are characterized by little or no pain except when they are exposed to undue motion.

Gangrenous balanitis and vulvitis are characterized by excruciating pain, marked swelling, with a distinctive mal-odorous discharge. The part becomes quickly ulcerated, with a rapid development of the gangrenous process, which either causes a spontaneous separation of the part or the typical picture of gangrene. The finding of the spirochete and the fusiform bacillus enables one to recognize this condition.

Pyogenic infections of the genital organs are not uncommon, and differ in no wise from a like infection elsewhere on the body. Among these may be mentioned furuncle, folliculitis, pyogenic ulcers, all of which may be recognized by bacteriologic and clinical study.

Ulcerating granuloma of the pudenda are ulcers that are given to chronicity, with raised papillary borders. When seen on the glans penis, they much resemble macroscopically a chancre. This condition begins usually with the history of a papule or nodule in the skin or mucous membrane which breaks down and coalesces with the formation of large ulcers. Ulceration will be found intermingled with areas of scar tissue as healing and extension occur in the same patient. The disease lasts not infrequently for many years. It is claimed by some that a characteristic tissue-section picture exists. This, together with the isolation of the spirochetal symbiosis, or as others claim, Donovan's bodies, seems to form a characteristic clinical picture.

Scabies, which commonly attacks the genitalia, is not infrequently taken for a venereal disease, but taking into consideration the distinct itching and appearance of this characteristic lesion on other parts of the body, it should offer but little difficulty. In the event, however, a pustule develops on the glans, which not infrequently occurs, the condition is quite suggestive. The cuniculus, when it is not obscured by inflammatory reaction, is visible to the naked eye as a minute furrow in the skin; in the webs of the fingers where the skin is thin they are most readily found, and show lines about one-eighth, to one-fourth of an inch long. The line is usually blackish as though the horny epidermis had been scratched with a needle point without producing any inflammatory reaction, and the epidermis is raised slightly so that the dirt is entangled in it.

Acute infections diseases with pustular or vesicular lesions are occasionally mistaken for venereal disease, especially when these infections occur on the genitalia. These patients often disregard lesions elsewhere and consult the physician only when they have a penile lesion, and the physician in his haste at times overlooks the general character of the disease. The fully developed pustule of smallpox is a rather characteristic lesion; it is sharply elevated, pointed, or globular, is of a yellow color on account of its purulent contents, and is situated on a firm red base. It is larger than other pustules and stands out sharp and aggressive from the skin. The pustules, after two or three days, begin to rupture, and after the tenth or eleventh day they begin to dry up. The pus dries into yellowish or brownish crusts, which adhere closely and are not thrown off for several days. Upon careful examination of the patient in general, together with the clinical picture, it is always inexcusable that this should be taken for a venereal disease.

Chicken-pox lesions first appear as red macules which almost immediately become papular and after from four to six hours develop into clear vesicles upon a reddened base. The vesicles become opalescent, and within 36 to 48 hours become pustular and either rupture or dry, being converted into crusts by the third or fourth day. These quickly exfoliate, leaving temporary stains, and scars after a few of the lesions. Again it is necessary to take into consideration the clinical picture and the appearance of the skin lesions on other parts of the body.

Lichen planus lesions occur on the mucous membrane; very commonly they develop in inflammatory papules with a gray surface like points that have been touched with nitrate of silver, and do not show the characteristic angular outline of the lesion of the skin. The recognition of their character depends upon their association with skin manifestations. Lesions have not infrequently been observed upon the genitalia, usually as inflammatory papules topped with grayish epithelium, at other times typical planus papules. The suggestion gotten from the above description, associated with the elementary lesions of lichen planus on the body, should serve to differentiate this condition from venereal diseases. The papules are sharply defined with raised sides.

and, frequently, upon close examination the angle of the lesion shows linear prolongation like minute keloids which give the lesion a stellate outline. The color of the individual lesion is usually violaceous or a dull red. The lesions are tense and firm, and have a shining appearance; occasionally there is minute scaling. The papules of lichen planus show no tendency to peripheral enlargement. The elementary papules are the typical lesions of the disease throughout its course.

The primary lesion of yaws is very suggestive of the primary sore of syphilis. Yaws does not normally ulcerate, but as a result of injury and infection of pyogenic organism ulceration is not an uncommon complication. As a result of this infection, extensive ulcers may develop. The lesions reach their development in about two weeks, remain stationary, then begin to shrink. This shrinking process takes about four weeks, leaving pigmented spots. The lesions are always insensitive. The appearance of these lesions, which are generalized on the body and are associated with finding of the spirochete pertenuis, serves in the differential diagnosis.

Herpes zoster is occasionally confounded with some of the other genital manifestations, but with the following points considered in connection with this disease, confusion should not arise: The eruption begins with the sudden appearance of inflammatory papules which develop into tense vesicles. Their contents are at first a clear opalescent serum. This soon becomes turbid, but does not ordinarily become purulent unless there is secondary infection. In severe cases there is an occasional hemorrhage, and in the severest form gangrene may take place in the area and cause much destruction of tissue. The duration of one crop of lesions is usually about a week, but by the appearance of successive groups the disease may be prolonged for many weeks. The characteristic subjective sensation is that of a neuralgic, burning pain.

Eczema of the genitals and contiguous skin occurs frequently and is ofttimes of a most rebellious nature. It is accompanied by a distressing form of itching. The skin exacerbations come and go. They consist of slight scaly erythematous patches, which may be discrete papules and papulo-vesicles. From this there is only a step to the marked pustular type, but with the intense itching, the appearance in all likelihood of eczematous patches elsewhere with more or less characteristic lesions, as above described, there will be little difficulty in recognizing this condition. Eczema of the prepuce is often seen in connection with a balano-posthitis, diabetic in origin, the infective factor growing in saccharine urine.

Kraurosis vulvae develops on the external genitals, especially the labia minora and preputium clitoridis. They become shriveled and atrophied; there are frequently gray roughened plaques of leukoplakia. The surrounding skin is usually dry and shining whitish, or a reddish gray color. It is a disease of adult or later life.

Anatomically the condition would seem to be primarily an inflammatory process, resulting in sclerosis and atrophy of the corium and destruction of the appendages of the skin.

Infectious balanitis, syphilitic in origin, begins as an erosion in the layers of the prepuce and spreads peripherally until the whole prepuce is involved in a hyperplastic process. The prepuce is thickened, is usually of a dull red color, and has a velvety excoriated appearance. In this type of balanitis treponemata can be demonstrated in great numbers.

Papillomata of the penis are very common lesions, especially in the presence of an adherent or elongated prepuce. They are true papillary outgrowths, highly vascular, and composed of epithelium. They are nearly always multiple, their favorite site being just behind the corona glandis, although they are also encountered within the cavity of the prepuce. They are bathed in a fetid puriform secretion, occasionally becoming surmounted on their apex by an ulcer, resulting from the erosion of the epithelial covering.

Gangrene of the genitalia is usually the result of inflammation; however, spontaneous gangrene usually occurs in connection with the acute exanthems. It may also occur in senile and diabetic patients or acute alcoholism, as cited by Jacobson. The clinical picture is that of a localized gangrenous process found elsewhere.

Medical Arts Building.

DISCUSSION

DR. LAWRENCE T. PRICE. *Professional Building, Richmond:*—I think the Society should be congratulated in having had Dr. Driscoll review the subject under the heading of this paper so exhaustively. Oftentimes, as we get older, we are inclined to ignore some of the comparatively insignificant things, commonplace things, things that all of us see every day and many of us many times every

day. Dr. Driscoll has been working in the dispensary of the Medical College of Virginia for years—a place where I formerly worked for eighteen years—and while working there he has, of course, had an enormous amount of material to work with. Times have changed, I think, since I first began work in that dispensary, many years ago. Dr. Driscoll says chancre is responsible for about eighty per cent of the lesions. I would have said chancroid was responsible, years ago, for fifteen or eighteen per cent. Chancroid has been becoming less frequent. During the war the activities of the Public Health Service apparently diminished syphilis, but since the war syphilis has been more prevalent. I have been very much impressed sometimes with the superimposing of a chancroid on a chancre or on an abrasion or upon herpes. Most particularly do I wish to call attention to pouting of the meatus. So often a general practitioner will take a meatal discharge to be gonorrhea. It may or may not be at that time. However, subsequently, the meatus will get more pouty, and subsequent induration will show it to be a chancre. This may be overlooked in the general practitioner's hands, and I do believe that a great number of our tertiary syphilis cases have been treated in the beginning for gonorrhea. That is due to the ignorance of the doctor or possibly to taking the word of the patient and not making a local examination. I have great fears for the future of our people as regards venereal disease. I may speak something that is a bombshell. I do not believe in any way in legalizing prostitution, but I have noticed that there has been a great increase of venereal diseases in our community in a certain circle of people since the abolition of the red light district. Some years ago I was asked what I would do had I the opportunity to do something to limit the spread of venereal disease. I said I would designate a street, have the inmates registered with the board of health, have photographs made and finger prints taken, have examinations made at stated frequent intervals and registered with the police, and keep them under supervision. Of course, this does not meet with the approval of religious people, but I am looking at it from a practical standpoint. You who live in the city or in the country know what happens in automobiles by the side of the road, in apartments, etc., and if there were some opportunity for a person to give vent to his feelings where there was some regulation and inspection by the board of health, I feel that the outlook as regards venereal diseases would be somewhat better than it is at the present time.

Dr. W. A. Brumfield, *Blacksburg:*—I think the method which Dr. Price has somewhat advocated has been completely tried out in Germany and less completely in France—i. e., segregation and registration and examination. While there are a great many still who are willing to have segregation and examination, it seems to me they wholly lose sight of the fact that it could not possibly be consistent with our ideas of preventive medicine along any other line. All of us are agreed that a hotel, boarding house or restaurant should not be permitted to keep a common towel for the use of all of its guests as they come along. It has been shown time and time again that these registered and examined inmates serve an exceedingly large number of individuals; and, if it were possible for us to make a sufficiently complete examination to assure ourselves that these individuals are free from any infection and then put up the red light and invite whosoever wishes to come, it would certainly be far more dangerous than using the common towel or common drinking cup or anything of the kind. For these fomites, we might say, are not the natural habitat for the disease-producing organism, whereas the genitalia are; and if we did not examine and certify the persons who visit these individuals, also, if we started them out tonight, by morning probably every inmate would be contaminated and capable of spreading infection.

In Germany, the land of efficiency, and less efficiently in France, registration, examination, segregation and certification had been practiced for many years before the war, but when the men were called up for physical examination the percentage of venereal infection was higher in Germany than in France, and higher in France than in England and America, where no official cognizance of prostitution had been taken. The advocates of these measures for the control of venereal diseases claim that they protect innocent women from seduction and reduce sexual promiscuity outside of the segregated districts. If this were true, the rate of illegitimate births should be lower in countries practicing these measures than elsewhere, but we find the illegitimate birth rate highest in the country where these measures had been most efficiently applied, less so where they were taken less seriously, and least so where they were not recognized at all. Does any one believe that it is necessary to sacrifice a large number of women in a red light district for the protection of the girlhood and womanhood of our country, or that a man who is a frequent patron of the district is a safer companion for an innocent girl or woman than the man who does not visit brothels? We deny it.

I am now speaking to Dr. Smith's paper. He pointed out that the individuals who are irresponsible, who are not able to take treatment, should be forced to take treatment, should be forced into quarantine. These venereal diseases today in the State of Virginia are quarantinable, just as smallpox and scarlet fever are. They are the only diseases of which the law says they may be quarantined anywhere within the state. One of the things we need most is a place for infected individuals who are not able to make a living in any other way than by selling themselves and who are not able or willing to pay for treatment where they can be sent for quarantine and treatment until they are not dangerous to any other individual. I see the effect of this at Blacksburg. There was a rather attractive individual there who was responsible for a few cases of gonorrhea that came under my observation. Her victims told me very frankly. I had her arrested under this law, and sent her with a trained nurse up to Ivakota Farm, where she stayed for three months and then went back to her old home in Kentucky.

Dr. ————: I want to tell Dr. Driscoll that I differ with him in regard to the outlining of vices tempting to human kind. For their cure I would state more education and more Christianity.

Major H. L. Freeland, M. C., U. S. A., *Richmond:*—During the last week I had two peculiar cases of skin disturbance in the genitalia. The first was the case of a young man who came to me with a peculiar sore outlined on the prepuce. If one could see these cases as they originally appeared, we should have less difficulty. In most cases they have done something to them, if nothing more than rubbed cold cream on them, which interferes with the appearance of the lesion. This did not appear to be a syphilitic lesion, and, upon stripping the man, I found several patches of psoriasis. Had I gone no further than the genitalia I might have been entirely misled.

The other case was that of a three-year-old baby. I first noticed two or three drops of pus at the meatus. I made the usual inquiries about the nurse, how long they had had her, where she came from, etc. I inquired about the seat of his rompers, since he is growing so rapidly, but I am still at sea. It looks like an infectious lesion, but what it is I do not know.

Dr. Dudley C. Smith, *University:*—I should like to add an "s" to "dark field" and make it "dark fields." Very often a patient comes in complaining of a genital sore, and the dark field is negative. The patient has been using "antiseptic" tablets or something else locally. On later examination the dark field is positive. I think every genital sore should be considered syphilitic until syphilis is ruled out.

I should like to say again that this whole question of venereal diseases can be better handled if we talk about them and think of them as medical problems, which is the practical way to handle it. We should not invite discussion that brings in moral issues.

Dr. Driscoll, closing the discussion: I wish to thank you for your discussion. I do not know whether it is just in order for me to discuss the prevention of syphilis, since my paper is not on that subject. It is interesting, though. Unquestionably venereal diseases in the city of Richmond have increased, I do not know why. It may be that the physicians generally are thinking more about it and are recognizing these cases of syphilis, but I do say that both in my private work and in the dispensary the aggregate number of syphilitics has almost doubled in the last fourteen months. It is not the latent cases; they are new cases. I am seeing twice as many chancres as I saw two years ago. I do not know why that is. The segregated district means this—it means that one hundred per cent of the inmates of that segregated district have venereal disease. All prostitutes within a few months have a venereal disease. If that be true, they are all actually carriers of venereal disease. Let us assume, for the sake of argument, that the new prostitute for a few days or a few weeks has no venereal disease. Let us assume that the board of health will make examinations at certain intervals. That would be impracticable. You would have to examine after each and every act of coitus. That is most impracticable. Again, with our knowledge and the means at hand, at present we have to wait a certain period of time for the incubation of the disease, and because we do not find gonococci or treponema at the time it does not mean that they are not there. It may mean that this patient is absolutely infectious for numbers of days before we are able to demonstrate it microscopically or serologically.

As to Dr. Smith's remarks, I should have said "dark fields." I think every man who is at all interested in syphilis will make repeated examinations. Every man should assume that every genital lesion is a chancre and should persist in his dark fields until he has removed any doubt.

The clock of life is wound but once,
And no man has the power
To tell just when the hands will stop,
At late or early hour.
Now is the only time you own;
Live, love, toil with will;
Place no faith in tomorrow, for
The clock may then be still.—(*Selected*).

THE BLOOD IN SCARLET FEVER.*

By
JANVIER W. LINDSAY, A. B., M. D.,
E. CLARENCE RICE, M. D.,
MAURICE A. SELINGER, M. D.,
Washington, D. C.
With the Technical Assistance of Drs. J. S. Alexander, R. A. Cox, H. H. Ray and H. W. Rollins.

The physician interested in the various investigations in scarlet fever over a period of years finds the literature on the subject quite as interesting and inspiring as that of yellow fever and malaria. While much of our present-day knowledge is not new, it remained for the Dicks[1] to fulfill Koch's postulates as relating to scarlet fever. By experiments on human beings they proved that the *Streptococcus haemolyticus scarlatinae* is the cause of scarlet fever.

We wish to acknowledge the courtesy of Drs. R. S. Beale, C. M. Beall, Frank Leech, H. C. Macatee and J. D. Thomas for permission to utilize clinical material of the Contagious Disease Service of the Garfield Memorial Hospital.

It has been known for some time that the blood of patients convalescent from scarlet fever contains immune substances and this fact was taken advantage of by Weissbecker in 1896 and was successfully used by Zingher and others in the treatment of acute cases. In view of the good results obtained by this method of treatment, it is difficult to understand why its use did not become more general. The presence of immune bodies in the blood of the convalescent scarlet fever patient can be demonstrated by injecting 0.2 cc. of serum into the skin of another during the early stage of the disease when the rash is present. Within a period of twenty-four hours an area of blanching of the rash will usually be noted. This rash extinction phenomenon, known as the Schultz-Charlton[2] reaction, is of some diagnostic value inasmuch as the rash of scarlet fever is the only one to be blanched by immune serum. Due to certain modifying factors the reaction described does not always occur.

The increase in antitoxic substances in the blood of the scarlet fever patient can be measured by daily intradermal injections of scarlet fever toxin. From the onset of the disease until the fourth or fifth day, one skin test dose will usually give a positive reaction, indicated

---

*From the Laboratories and Scarlet Fever Service of the Garfield Memorial Hospital, Washington, D. C.
Read before the fifty-seventh annual meeting of the Medical Society of Virginia, at Norfolk, Va., October 12-15, 1926.

by an area of reddening and swelling of the skin 1.5 cm. or more in diameter. Later, the same dose of toxin produces but slight or no reaction until at the tenth day of the disease from five to ten skin test doses of toxin will ordinarily be insufficient to produce the original reaction, indicating that the patient's blood now has many times more antitoxin than at the onset of the disease. This increase in the antitoxic content of the blood continues as the disease runs its course. Thus far we have never found a person to react positively to one skin test dose of toxin who has previously had the disease, which bears out the observation that one attack ordinarily produces a permanent immunity.

The ability of scarlet fever toxin to produce the skin reaction in non-immunes (positive Dick test) makes this procedure of great importance as a diagnostic and public health measure. Zingher[3] in a large series of Dick tests found that the percentage of susceptibles was quite similar to the results obtained with the Schick test for diphtheria and that the largest number of non-immunes was found between the second and third years. The percentage of positive reactors of all ages was 34.4. A larger percentage of positive reactions was obtained in children attending private schools than those in public schools. Also it has been noted that nurses prior to duty in scarlet fever wards give a higher percentage of positive reactions than those who have completed their tour of duty with no history of scarlet fever. Our findings are in agreement with these observations. These results would indicate that constant association of non-immunes with carriers of the *Streptococcus haemolyticus scarlatinae* produces an active immunity by means of mild types of infections, such as sore throat.

That the disease is similar to diphtheria, viz., a local infection of the naso-pharynx with general symptoms the result of absorption of the elaborated toxins, has been apparent to us, for, in a series of sixty-three blood cultures on forty-six patients, only one was positive, this being in a patient with hemolytic streptococcus septicaemia with fatal outcome.

Chemical Examination

In general it may be stated that there is a moderate nitrogen retention in the blood, 79 per cent of all cases showing non-protein nitrogen values over 35 mg. per 100 cc. during the course of the disease, figures at variance with those given by Cohn,[5] who found but 40 per cent. A gradual fall is noted after the fifth day, a later rise being occasioned by some complication, such as nephritis or mastoiditis. We agree with Ciuca and Nadejde[4] that the blood and urinary findings are not always in accord, and are of much the same opinion as Percival and Stewart[6] in that the non-protein nitrogen and urea nitrogen determinations are of little value in serving as a warning of impending nephritis, inasmuch as the urinary abnormalities are often present before the blood changes take place, although those patients showing albumin and casts in the urine in general gave non-protein nitrogen values approximately 30 per cent higher than those not so affected. Much of the nitrogen retention can be accounted for by metabolic changes due to tissue destruction and damage incident to the febrile reaction. There was a definite relationship between the non-protein nitrogen values and the presence or absence of albumin in the urine. Those cases showing albumin in the urine gave non-protein nitrogen values 29 per cent above those with none. The findings in patients with normal and abnormal urinary findings are given in Table I.

Table I—Average Non-Protein Nitrogen of Blood of 27 Patients with Normal and Abnormal Urinary Findings.

Day of Disease	3	5	7	14	21
Normal Urine	31.7	44.0	30.6	28.0	35.9
Urine with Albumin, Casts, Red Blood Cells or Pus	55.3	36.6	39.4	42.7	45.2

Estimation of the blood chlorides was not done in every case, but, where the determinations were made, there was a tendency to be lower than normal, retention being noted when edema was present. The various chemical changes of the blood are shown in Table II.

Table II.—Chemical Examination of the Blood of 12 Patients Treated without Serum, and 20 Patients Treated with Serum. (Average).

Day of Disease	Non-Protein Nitrogen mg. per 100 cc.		Uric Acid mg. per 100 cc.		Urea Nitrogen mg. per 100 cc.	
	Serum	None	Serum	None	Serum	None
3	40 0	43.	7.5	6.4	18.0	23.0
5	34	46	4.6	2.9	17.0	18.0
7	36	32	4.4	2.0	18.1	13.0
14	32	34	4.5	--	14.0	--
21	36	39	--	--	--	—

Blood Counts

As the disease progresses there is a gradual reduction in the number of erythrocytes and in the haemoglobin content of the blood, the change being proportional to the severity of the disease. During the third and fourth week it is not uncommon to find the red blood cells between 3,500,000 and 4,000,000 per cu. mm. and the haemoglobin between 10 and 12 grams per 100 cc. of blood.

One of the most characteristic reactions to the disease is found in the white blood cell count and differential. In the mild cases the total count is usually between 15,000 and 20,000 with an increase in polymorphonuclear neutrophiles to between 80 and 90 per cent. The lymphocytes are low and the eosinophiles are absent or normal up to the third day. In general, it may be stated that the more toxic a patient is, the higher the total white blood count and the percentage of polymorphonuclear neutrophiles. In the severe types of infection the eosinophiles remain at normal until the toxic symptoms begin to abate. The number of leukocytes reaches its maxium of about 19,000 by the third day with a gradual fall until the third week, after which a moderate leukocytosis of 14,000 is maintained for at least five weeks. The polymorphonuclears drop to an average of 71 per cent at the second week, and to approximately 60 per cent by the fourth week, which is maintained throughout the fifth week. The lymphocytes return to normal by the second week and remain at that level. The eosinophiles gradually rise from the third day, reaching the highest average, 6 per cent, at the fourth week. Eosinophilia was present in 70 per cent of the thirty-seven patients not treated with immune serum, and persisted for at least five weeks. This cell reaction is most marked in children. The highest percentage of eosinophiles observed by us was 20 per cent. Bunting and Thewlis[7] interpret the excessive leukocytosis as the reaction of the white blood cells to the streptococcus infection, the eosinophilia being the result of skin and mucous membrane injury, and the lymphoid reaction as being due to the sub-

Table III.—Blood Counts on 20 Patients Treated with Scarlet Fever Streptococcus Antitoxin and 37 Treated without Serum.

Day of Disease	White Blood Cells per mm.		Per cent Polymorphonuclear		Per cent Lymphocytes		Per cent Trans.		Per cent Large Mono.		Per cent Eosin.	
	Serum	None	Serum	None	Serum	None	Serum	None	Serum	None	Serum	None
3	15,100	18,925	87	85	11	9	0	2	1	1	1	3
5	14,640	14,000	78	81	18	13	1	2	2	1	2	3
7	11,950	15,270	76	71	18	21	2	3	2	3	2	3
14	14,540	15,350	80	71	16	23	1	2	1	1	1	3
21	10,850	11,150	74	69	22	23	1	3	1	1	2	4
28	-----	14,000	--	60	--	22	--	4	--	1	--	6
35	-----	14,330	--	61	--	26	--	5	--	1	--	6

sequent appearance of immune bodies in the blood. They feel that the neutrophilic elements react to the living organisms, and that the toxins produce a response in the mononuclear or lymphoid elements. The various blood changes are shown in Table III.

The Effect of Scarlet Fever Antitoxin on the Blood

Of the fifty-seven cases included in this study, twenty patients representing the most toxic were given intramuscular doses of scarlet fever streptococcus antitoxin sufficient to neutralize one million skin test doses of scarlet fever toxin.

Bearing in mind the difference in toxicity in these two groups, a definite effect on the temperature, pulse and blood findings was noted. The temperature, which was 1.4° F. higher in the treated cases at the time of administration of serum, in forty-eight hours was 0.4° F. lower than the untreated, and the pulse rate showed a similar relationship.

The total white blood cell count showed no important changes in the treated group, but the polymorphonuclears showed a more rapid drop. The lessening of skin and mucous membrane injuries was quite apparent in the treated cases by a normal average of eosinophiles throughout the disease, many of these cases desquamating but slightly or not at all so far as could be determined. Of the patients receiving scarlet fever antitoxin, 50 per cent showed an eosinophilia, while 70 per cent of those not receiving serum gave an increase in eosinophiles. The non-protein nitrogen values in the untreated cases were over 16 per cent higher than in the treated cases, presumably a result of increased metabolic changes. These comparisons are shown in Tables II and III.

The Blood Count in Diagnosis

The blood count may at times be of distinct value in diagnosing a case of scarlet fever or differentiating from another disease, especially if the various skin tests are not available. The severe cases of influenza with rash may offer considerable difficulty in making a diagnosis; however, the leukopenia of influenza as compared with the leukocytosis of scarlet fever will be a valuable point in diagnosis. Occasionally a patient will be seen for the first time by the physician late in the disease and a diagnosis will be difficult to make. Hospitals caring for contagious diseases occasionally receive patients as suspected cases of scarlet fever. If seen early enough in the disease, prior to the fourth or fifth day, the Dick test will be of value as will the Schultz-Charlton reaction, and a diagnosis can be made with the aid of these tests. If the patient be received at the hospital after the fifth day of the illness and the Dick test is negative, the blood counts may furnish sufficient information to make a diagnosis together with the history and physical examination. The prolonged leukocytosis and eosinophilia of scarlet fever, if present, should be an important point in making the diagnosis.

The following cases are cited:

Case 1. C. A., white female, aged 4, admitted to the Contagious Ward from Children's Hospital, where an adenectomy and tonsillectomy had been done. Except for a very faint scarlatinal rash on the chest and a temperature of 99.2° F., the patient showed no evidence of disease, for she did not feel sick. The blood examination on admission showed: white blood cells, 9,000, and polymorphonuclears, 75 per cent; lymphocytes, 16 per cent; transitionals, 3 per cent, and eosinophiles, 4 per cent. A confirmatory diagnosis of scarlet fever was made largely on this count, the Dick test not being available at this time. There was practically no desquamation during the illness. Thirty days later the counts were as follows: White blood cells, 16,500; polymorphonuclears, 67 per cent; lymphocytes, 19 per cent; transitionals, 3 per cent; large mononuclears, 2 per cent, and eosinophiles, 9 per cent.

Case 2. C. D., white, male, aged 7, admitted to detention ward on twenty-first day of illness. The physician called to see the patient in the home had found no rash, but the parents gave a history of the child having one of scarlatinal character several weeks previously. There was a profuse nasal discharge. The temperature was normal on admission. The leukocyte count was 18,500, with polymorphonuclears, 67 per cent; lymphocytes, 20 per cent; large mononuclears, 4 per cent, and eosinophiles, 9 per cent. On the strength of the previous history, physical findings and blood examination, the diagnosis of scarlet fever was made.

On one occasion during the service, one of us (E. C. R.), in an army base hospital during an influenza epidemic, a regimental surgeon sent three men to the hospital diagnosed scarlet fever and one as influenza. The symptoms and rash of all four were much the same. The admitting officer, unable to satisfy himself as to the correctness of the diagnoses, asked for a blood examination on each patient, with the result that the three diagnosed scarlet fever showed a leukopenia, and the fourth, supposedly having influenza, had a white cell count well above normal. The diagnoses were

reversed and the subsequent histories of the patients bore out the correctness of the final diagnoses.

With the advent of the Dick test, the blood examination has become of less importance as a diagnostic procedure, but in connection with the skin test and cases seen late in the disease, this laboratory examination still holds a place of considerable importance.

Summary

1. The presence or absence of immune bodies in the blood of any individual can be determined by means of the Dick test.

2. The increase in antibodies produced can be measured by the same test.

3. The presence of immune substances in the actively immunized can be made use of in the diagnoses of scarlet fever, viz., the rash extinction test (Schultz-Charlton reaction).

4. In the event that scarlet fever antitoxin is not available, larger doses of convalescent or immune human serum or whole blood should be used in the treatment of the disease.

5. The chemical examination of the blood during the acute stage of the disease usually shows a nitrogen retention which may be of value in determining the degree of toxicity of the disease but does not aid in anticipating kidney changes.

6. The administration of scarlet fever streptococcus antitoxin has a definite effect on the temperature, pulse rate and blood, indicating a reduction in toxicity.

7. The blood picture is characteristic of the disease, giving a marked leukocytosis and gradually increasing eosinophilia which may be of diagnostic value.

References.

1. Dick, G. F., and Dick, Gladys H.: The Etiology of Scarlet Fever, *J. A. M. A.*, 82:301, Jan. 26, 1924.
2. Schultz, W., and Charlton, W.: Serologesche Beobactungen Scharlachexanthem. *Ztschr. f. Kinderh.*, 17:328, 1918.
3. Zingher, A.: The Dick Test in Normal Persons and in Acute and Convalescent Cases of Scarlet Fever. *J. A. M. A.*, 83:432, Aug. 9, 1924.
4. Ciuca, M., and Nadejde, F.: Azotemia dans la Scarlatina. Compt. rend. Sos. de biol., 93: 389, July 10, 1925.
5. Cohn, E.: Non-Protein Nitrogen in Blood in Pneumonia, Scarlet Fever, Measles and Diphtheria. *Deutsche med. Wehnsohn*, 48:226, Feb. 16, 1922. Abstr. *J. A. M. A.*, 78:1499, May 13, 1922.
6. Percival, G. H., and Stewart, C. P.: Renal Function in Scarlet Fever. *Edinburg M. J.*, 33:53, Feb., 1926.
7. Bunting, C. H., and Thewlis, E.: Leukocytic Reaction in Smallpox, Chickenpox, Scarlet Fever, Measles and Mumps. *Arch. of Path. and Lab. Med.*, 1:188, Feb., 1926.

Discussion.

Dr. Warren T. Vaughan, *Richmond:*—Scarlet fever appears to be on the wane, either in its incidence or in its severity. In the last forty years the death rate from scarlet fever in the United States Registration area has fallen from thirteen per 100,000 to around three per 100,000. Synchronous with this, of course, there has been some lessening of interest in scarlet fever as a disease, but the work of recent years on its etiology has renewed interest. I feel that the important point that Dr. Rice has brought out in connection with the epidemiology of the disease lies in the subject covered in the title, *the blood findings*. We bave a disease now in which we know the cause, a disease which is apparently spontaneously on the wane, and a disease in which there is perhaps some hope of its further or even complete eradication. But the difficulty of diagnosing the mild case is well known, and the points Dr. Rice has brought out as aids in diagnosis, even after the patient is convalescent, should be of assistance in establishing whether an illness is or has been scarlet fever, and are important to the public health from the point of view of preventing the spread of the disease.

He also brought out some points of value in *individual* preventive medicine, i. e., the kidney findings and the blood chemistry findings. If we could develop a way of recognizing those cases in which the kidney has been more seriously affected and could institute the proper measure to prevent the subsequent development of cardiovascular affections years afterward, we should have an important weapon for the practice of preventive medicine in the individual case. Thus, it has been shown that chronic nephritis, one of the diseases of middle life which has been considered non-preventable, is often associated with some remote prior injury to the kidney which has made the cardiovascular system the *locus minoris resistentiae*, so that the kidneys are unable to handle the excess proteins most of us take. It is, however, not until years later that the system begins to break down from the overstrain. If we can recognize the kidney injury in cases of scarlet fever, we shall be practicing individual preventive medicine by applying appropriate preventive dietary restrictions and checking kidney and cardiovascular function from time to time.

TUMORS OF THE BREAST WITH SPECIAL REFERENCE TO THEIR DIAGNOSIS AND TREATMENT.*

By J. SHELTON HORSLEY, M. D.,† Richmond, Va.

It is difficult to discuss tumors of the breast in a short paper, though some of the high spots may be touched. They are divided into two general classes, benign and malignant.

Benign tumors are variously classified, but may be considered as: (1) periductal fibroma,

*Read before the fifty-seventh annual meeting of the Medical Society of Virginia, at Norfolk, October 12-15, 1926.

†From the Surgical Department of St. Elizabeth's Hospital, Richmond, Va.

(2) periductal myxoma, (3) fibro-cyst-adenoma, (4) papilloma cyst-adenoma, and (5) chronic cystic mastitis. To this may be added the blue dome cyst of Bloodgood, which is another expression of chronic cystic mastitis. The malignant tumors are sarcoma and carcinoma.

Development of Mammary Gland

In order to gain a clearer conception of these tumors, let us recall the various stages of development through which the mammary gland passes. At birth it contains an aggregation of radiating ducts that are club-shaped at the end but with no acini. The epithelium of these ducts, however, is often active in proliferation and causes swelling and pain in the mammary gland, constituting the so-called mastitis of infants. After this, no particular histologic change occurs until the age of puberty, when the breast enlarges, becomes tender and firm, acini begin to appear, the epithelium in the ducts and acini grows rapidly and the ducts become intimately surrounded by a type of connective tissue described by Warren as almost transparent with many nuclei, and strongly contrasting with the interstitial connective tissue of the gland. It is this type of periductal connective tissue that enters into many of the benign tumors of the breast, and because of its intimate association with the epithelial structures there is always some epithelium present, even though the periductal connective tissue predominates.

With pregnancy lactation makes another marked change in the breast from rapid epithelial growth. According to Bloodgood, the epithelium in benign encapsulated tumors of the breast often multiplies during lactation of the mammary gland and may be mistaken for cancer.

The last change in the mammary gland occurs when atrophy and degeneration from age and disuse appear. This, as a rule, begins about middle age and is seen particularly in the acini and in the interstitial tissue. Normally the epithelial elements gradually degenerate and almost disappear, the structures of the mammary gland being largely replaced by fat. The epithelium of the acini may degenerate and choke the ducts, thus causing dilatation and induration. This change frequently produces lumpiness and pain in the breasts of patients about the menopause. In what Warren has termed abnormal evolution, generally called chronic cystic mastitis, the epithelial elements become proliferative, the ducts are compressed or plugged and cysts form. The microscopic appearance of this condition varies very greatly. Some authors consider chronic cystic mastitis as a frequent fore-runner of cancer. Others attach but little importance to it as a precancerous stage. That it does occasionally precede cancerous growth, however, has been definitely proved in at least a few instances. It seems probable that such an epithelial proliferation should sometimes cause cancer.

Diagnosis

The age of the patient has much to do with the diagnosis of a tumor of the breast. Bloodgood has in many communications called attention to the importance of a careful physical examination of tumors of the breast. In young women, particularly about the menstrual period, manipulation of the breast may cause indefinite masses, possibly from temporary hyperemia due to sexual excitement. They soon disappear. A tumor in the breast of a woman under 35 is usually benign, particularly if there are multiple tumors. After 35 years of age the probability of malignancy increases. A freely movable tumor in a young woman and without attachment to the surrounding tissues is doubtless originally benign. If such a tumor is a periductal fibroma and grows rapidly, not infrequently it may merge into a myxoma, and that is closely akin to a sarcoma. If the tumor is single and firm, and slightly infiltrating, it should always be regarded as suspicious of malignancy, particularly if it occurs after the age of 35. Multiple tumors are benign in most cases.

Usually there is no pain in cancer of the breast in the early stages. A small tumor of the breast that is painful is more likely to be benign than malignant. No ironclad rule can be laid down, however, for I have seen in rare instances early cancer of the breast cause pain. In the late stages of malignancy there is almost always pain. When ulceration occurs, a resulting mixed infection may produce pain, but in the late stages of malignancy it is usually due to the involvement of the spine around the posterior nerve roots or to involvement of the pleura. A patient who has mammary cancer or who has been operated upon for it and complains of "pleurisy," always brings ominous symptoms which may

prove to be due to internal or to spinal metastases. In general, when in doubt it is best to consider the growth malignant rather than benign.

The aspiration of what appears to be a cyst in a woman over 35 is often followed by its disappearance, but occasionally these cysts prove to be cancerous and aspiration merely stimulates the growth.

In young women and girls with multiple small tumors operation is usually not indicated. Sometimes with child-bearing or increase of age these tumors disappear. A single tumor in these patients, however, and particularly if it tends to grow, should as a rule be extirpated. In women under 35 years of age this may be done without any particular precautions if the growth is freely movable, taking merely a surrounding portion of apparently healthy mammary gland tissue. After 35, the patient should be prepared for a radical operation, except in the most obvious cases where the growth is freely movable and accessible.

In two cases that I recall, such a growth that I thought benign proved to be malignant. In one, Mrs. W., the patient's age was 33 and she had a fairly movable tumor. After operation in which the tumor with some surrounding tissue was removed, microscopic examination the next day showed it defintely malignant, at least in a portion of the tumor, and a radical operation was done two days later. At present, fifteen months after operation, she is free from recurrence. In the other case, Mrs. T., aged 40 years, there was a small scirrhous cancer rather deeply situated. Its nature was recognized while attempting to remove it and a radical operation was immediately done. She is free from recurrence now, eight and a half years after operation.

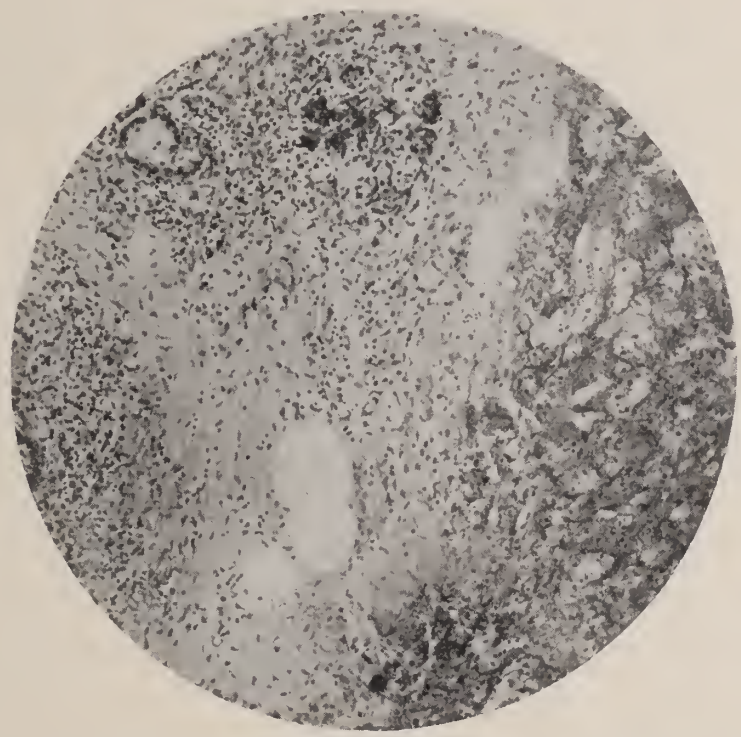


Fig. 1.—Mrs. L. E. C. Photomicrograph of fat necrosis of the mammary gland. On the right is some necrotic material. Just below the center of the picture are cavities which evidently contained fat. There is round cell infiltration throughout most of the photomicrograph. Near the top are remnants of acini. (X 115).

By removing a moderate amount of mammary gland tissue around the tumor the chances of stimulating the growth are much less than if the growth were cut into and a section made. When a tumor within the mammary gland is cut into with a knife and a microscopic report of the tissue removed is made a few days later, metastasis often follows if there is malignancy unless the incision is cauterized immediately, preferably with the electric cautery. Robert B. Greenough says, "It

has been my experience that the removal of tissue by a local operation with the subsequent delay of a week or ten days for a pathological report has proved almost inevitably fatal, even though a most radical operation be done as soon as the pathological evidence of the presence of cancer is presented." It would seem a better policy to remove the whole tumor and if it is obvious that the tumor has no capsule the chances of it being cancer increase very greatly.

was no distinct history of trauma. An incision about 2 inches long radiating outward was made over the growth. A piece of tissue was examined under frozen section and showed the appearance of fat necrosis. The portion of the breast affected was excised and the patient recovered satisfactorily. (Figure 1). In another patient, Mrs. C. P. K., aged 49, the fat necrosis followed a distinct history of trauma. The mass was in the left breast and appeared to be infiltrating. An incision was

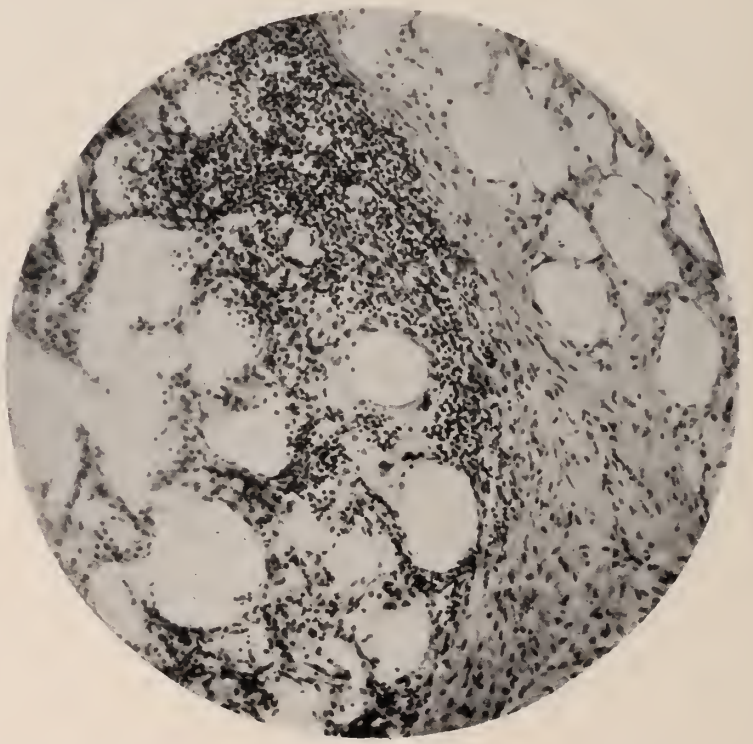


Fig. 2.—Mrs. C. P. K. Photomicrograph of fat necrosis of the breast. On the right and the left of the picture are cavities which contained fat. In the center near the top is intense round cell infiltration. About the center of the picture and along the periphery of the fat cysts are several giant cells of the foreign body type. They are also found elsewhere in the photomicrograph. Some of the smaller cyst cavities on the left have apparently united by rupture of the partitions forming larger cavities. (X 115).

Fat Necrosis

A very interesting condition often closely simulating cancer is fat necrosis of the breast. I have had two of these cases. In each instance there was marked similarity to carcinoma. The lack of definite contraction of the skin or nipple with continued soreness even in women of cancer age made a probable diagnosis of fat necrosis which was first described by Lee and Adair, of New York. In one of these cases, Mrs. L. E. C., aged 46, a tentative diagnosis of fat necrosis was made. There

made and several small cavities contained liquefied fat. One area was firm, and frozen section showed no malignancy but fat necrosis and cyst walls that had evidently contained liquefied fat. This portion of the breast was removed and the patient has had no recurrence. (Figure 2).

The possibility of fat necrosis in women with large fat mammary glands, particularly when there is a history of previous trauma, must always be borne in mind. This growth, while infiltrating and firm, does not usually produce

retraction and is not of the cartilaginous hardness of carcinoma. The work of Lee and Adair in calling attention to this condition is very valuable. Doubtless many patients have been saved a radical operation by careful attention to a diagnosis of this kind. It is also probable that in the older groups of statistics cases of fat necrosis have been unconsciously included as instances in which operation for cancer of the breast resulted in cure. Every case of fat necrosis does not show a typical histologic picture, but a general description of it by Ewing is as follows: "Usually the microscopic section furnishes a correct interpretation at once from the presence of much cellular overgrowth, fibroblasts mingled with lymphocytes, empty spaces once filled with fluid fat (oil cysts), formation of many phagocytic giant cells, and wide areas of proliferating fat cells."

Informing the Patient

Naturally there are some cases whose diagnosis is perfectly obvious, but, as a rule, if it be a malignant tumor, the plainer the diagnosis, the less the opportunity for cure. The diagnosis is difficult in the early stages, but it is then that treatment is effective. A tumor of the breast in a woman 35 years or over should always be considered malignant until it can be definitely proved otherwise.

When the diagnosis is in reasonable doubt in a patient of this age, she should be advised to enter a hospital and the aspects of the case should be frankly discussed with her. I do not think any good can be accomplished by deceiving these patients. Not infrequently a woman will come with her daughter, and the daughter requests that if the disease is malignant the patient shall not know it. This is unwise from many standpoints. Richard C. Cabot, of Boston, years ago reported upon what he called the experimental value of telling the truth to patients. He found that talking frankly but as optimistically as truth permitted, to patients suffering with any type of disease, was preferable to deception. Besides, if the patient's daughter knows that the surgeon has deceived her mother and she should later develop a tumor, she would naturally lack confidence in his opinion. In other words, in the majority of cases, no good really comes from such a policy of deception so far as the immediate patient is concerned, and as for the larger social effect much damage is done by undermining the confidence in physicians and surgeons. To be sure, it is not always necessary to ram brutal truths down the patient's throat when no request is made for the facts, but if she wishes to know the diagnosis she should be told the probabilities. Then there can be proper co-operation with the understanding that if on incision the tumor appears to be malignant and a frozen section confirms this diagnosis, a radical operation will be performed at once, but if it is benign a local operation will be done.

Treatment

The chief treatment for a malignant growth of the breast should be radical extirpation. At St. Elizabeth's Hospital some modification of the Rodman operation is now employed. At first the Jackson operation was done. The Rodman operation, however, permits of more elasticity in the shaping of the incision, while utilizing the principle of a block dissection and clearing the axillary contents first. At frequent intervals during the operation the wound is flushed with salt solution in order to remove any cancer cells that may have been extruded from the cancerous tissue during the dissection. A large rubber drainage tube is inserted through a stab wound to drain off the lymph that is poured out for the first few days. This lymph may contain cancer cells which might be taken up by the lymph vessels or spaces and which drain away through the tube instead of being absorbed.

Radium and X-ray, if intelligently applied, are often helpful. It is just as important, however, to have roentgenologic therapy given by an expert as it is to have a skillful surgeon. Improperly administered radiologic treatment may do great harm, may stimulate the cancer and promote metastases, whereas, if properly administered, much help is afforded in many cases. For the last few years we have adopted a policy of having malignant tumors of the breast given heavy erythema doses of X-ray by Dr. Fred M. Hodges, the roentgenologist to St. Elizabeth's Hospital, the day before operation. This is given over the site to be excised with the idea that the heavy dosage may sufficiently affect the cancer cells to retard or prevent recurrence. Just what the eventual results will be I cannot now say, but my impression is that in such cases there seems to be somewhat less tendency to recur. This, however, is merely an impression.

I believe the policy of giving frequent X-ray treatments extending over intervals of many days and weeks before operation may be harmful, because they cannot be given with sufficient intensity to affect the deeper cancer cells unless with an erythema dose. By giving an erythema dose the day before operation the material from which toxemia arises is excised before the toxemia and erythema develop, and a powerful dose of radiation is delivered to the tumor cells themselves.

Results

It is with considerable hesitation that I report our own results from operations for cancer of the breast. Indeed, I am not sure that any very accurate and helpful knowledge from such statistics is possible unless a detailed description of the histologic appearance of each tumor is given. Operations in which histologic examination of the tissue shows a low-grade of malignancy will produce a large percentage of cures. On the contrary, the most radical operation when there is a high degree of malignancy will produce few cures. This feature has been stressed by MacCarty and Broders, of the Mayo Clinic, and by Robert B. Greenough, of Boston. A very interesting article by Greenough deals quite fully with this matter of prognosis. He has shown that in low grades of malignancy, when the axillary lymph nodes are not involved, 82 per cent of cures in eleven cases occurred, whereas, when the axillary lymph nodes were involved in eight cases, there were 50 per cent of cures, using for cure the five-year limit. In the medium malignancy in seven cases with the lymph nodes not involved, there were 43 per cent of cures, and in twenty-six cases with the axillary lymph nodes involved, 31 per cent of cures. In high malignancy in a series of twenty-one cases, in five cases there were no cures when the axillary lymph nodes were not involved, and in sixteen cases there were no cures when the axillary lymph nodes were involved. In all of these cases practically the same type of operation was done.

The degree of malignancy depends largely upon the differentiation of the cells and the arrangement of the cells. According to Greenough, the important factors are whether there are vacuoles, showing the secretion of the cells, and the size and regularity of the cells and of the nuclei. Round cell infiltration seems to show, according to Greenough, a tendency toward degeneration, and while cases with extensive round cell infiltration show a larger degree of cures than cases with slight round cell infiltration, he is inclined to think the degree of round cell infiltration is more an indication of the degree of degeneration of the cells than of the intrinsic resistance of the patient. With cells whose nuclei are of uniform size there is likely to be a lower degree of malignancy.

It is not possible within the limits of this paper to enter into a discussion of the histologic types of cancer in each individual case, so these tables are given with considerable misgiving as to their value.

There have been 109 cases of malignant growths of the breast operated upon at St. Elizabeth's Hospital, Richmond, Virginia, from February 14, 1912, to January 1, 1926. One was sarcoma, and 108 were carcinoma. Eight were recurrent cases, in one of which only a biopsy was done and in seven a radical operation. In three cases only palliative procedures were resorted to, in one radium treatment was given, one was aspirated, and in one a partial excision was done. In ninety-seven cases operations more or less radical were performed. There were two deaths in the hospital, one from a virulent hemolytic streptococcic infection which apparently was hemotogenous and caused death five days after operation. This occurred in May, 1919, when there was an epidemic of influenza. The other patient, 73 years of age, died suddenly on the thirteenth post-operative day. She had been sitting up and apparently died from a cardiac condition. The wound had healed satisfactorily.

Of the cases operated upon more than five years ago, forty-nine have been traced and twenty, or 40.8 per cent, are without recurrence. Of those operated upon three to five years ago, eleven have been traced and six, or 54.5 per cent, are without recurrence. Of cases operated upon less than three years ago, we have traced twenty-five, and fifteen, or 60 per cent, are without recurrence. In one instance, Mrs. G., a second radical operation was done for an apparently independent cancer on the right breast seven years after an operation had been done for cancer of the left breast. This patient is living now, with-

out a recurrence, ten years after the last operation.

The benign tumors of the breast operated upon during this same period include 104 cases, as follows:

49 Abnormal involution;
29 Adenofibroma;
8 Cyst of breast;
6 Papillary cystadenoma;
8 Periductal fibroma;
2 Periductal fibromyxoma;
1 Periductal myxoma;
1 Periductal fibroma and involution cyst.

In one case the breast was removed for a large adenofibroma, in a patient on whom a hysterectomy was done at the same time for a malignant tumor of the uterus. The patient died five days later, apparently from the abdominal operation. With this exception, there were no deaths in the benign tumors. There have been, however, a few recurrences. One case of periductal fibroma, for instance, operated upon in 1914, had a recurrence of the same type of tumor in 1915 and in 1917. She is now apparently well.

BIBLIOGRAPHY.

Greenough, Robert B. "Carcinoma of the Breast at the Massachusetts General Hospital, 1918, 1919, 1920." *Sou. Med. Jour.*, March, 1925, pp. 187-192.
"Varying Degrees of Malignancy in Cancer of the Breast." *Jour. of Cancer Research*, Vol. IX, December, 1925, pp. 453-463.
Horsley, J. Shelton. "Benign Tumors of the Breast." *Sou. Med. Jour.*, May, 1920, pp. 356-363.
Lee, Burton J., and Adair, Frank E.: "Traumatic Fat Necrosis of the Female Breast and Its Differentiation from Carcinoma." *Ann. Surg.*, August, 1920. Vol. LXXII, pp. 188-195.
"A Further Report on Traumatic Fat Necrosis of the Female Breast and Its Differentiation from Carcinoma." *Surg., Gyn. and Obst.*, Vol. XXXIV, April, 1922, pp. 521-531.
"Traumatic Fat Necrosis of the Female Breast," *Ann. Surg.*, Nov., 1924, Vol. LXXX, pp. 670-691.

St. Elizabeth's Hospital.

GYNECOLOGY FOR THE GENERAL PRACTITIONER.

By SOUTHGATE LEIGH, M. D., F. A. C. S., Norfolk, Va.

Cancer of the uterus is still on the increase, and hopeless cases are turning up day by day notwithstanding the strenuous efforts put forth by surgeons and gynecologists to persuade both the family doctors and their women patients to apply for earlier relief.

The situation seems almost a hopeless one. Every medical man knows, or should know, that cancer of the uterus is preventable and curable in approximately 90 per cent of the cases *if*—and that is the crux of the situation—*if* taken in time. He also knows, or should know, that practically every case gives warning signs at an early stage when prompt treatment will prevent and cure. He knows, or should know, that these danger signs are exceedingly simple, and, indeed, elementary in their simplicity, consisting chiefly of leucorrhea or excessive menstruation, or bloody discharge after the menopause.

With, then, such a serious situation before us, and such a simple way of meeting the situation, why is it that we are getting nowhere and that cancer of the uterus is still getting the best of us?

For a long time the writer has given much thought and study to this apparently unreasonable problem, and has discussed it in one form or another at various meetings.

He has come to the positive conclusion that, in order to bring about the essential results, it will be necessary for the general practitioners, the family physicians, to become gynecologists to some extent at least.

In order to attain that much desired end, the men already in practice must take post-graduate courses in gynecology, and the medical schools will have to pay a great deal more attention to teaching the students the practical side of gynecology.

Unless one makes a point of talking with the general practitioners on this subject, he will have no conception of the situation. And, in passing, let me say that this is not meant in the slightest degree as a criticism of that vast body of men, especially in the country districts, who have always borne and still bear the greatest burden, and who deserve and have our most profound sympathy. They do wonderful work for humanity, much better than we of the cities could do under the same circumstances and surroundings.

I have for years been urging them to take up minor gynecology, discussing it with large numbers of them individually and at general meetings. I have repeatedly pointed out to them the enormous amount of good they could do, the great satisfaction they would have in the early recognition of dangerous conditions, and the opportunity of adding largely to their income.

Some of them have taken the matter up,

---

*Read before the fifty-seventh annual meeting of the Medical Society of Virginia, at Norfolk, Va., October 12-15, 1926.

equipped themselves properly, and are doing satisfactory work. But the vast majority feel that the task is too difficult a one, that the necessary training would take too much time, that an office nurse would be too expensive, and especially that it would be difficult to keep regular office hours.

While I recognize the force of all of these objections, yet I believe the real difficulty lies in the fact that the average medical man has only the vaguest idea of the essentials of gynecology, due to lack of practical training at his college, and feels that it is too difficult a proposition to be initiated in the midst of his other strenuous duties.

Books and lectures are, of course, essential in the theoretical study of gynecology, and a knowledge of the anatomy of the parts is a prerequisite, but the only way that practical gynecology can be learned is from a practical teacher who will demonstrate first the normal organs, later the various abnormal or diseased conditions, and then have the student examine after him. Later, the student is required to make his examinations first, and the teacher checks him up and criticises his findings.

As a matter of fact, the diagnosis of the ordinary gynecological conditions is exceedingly simple, the fundamental part being to be able to recognize the normal position and outline of the uterus, and the usual abnormal flexions and versions.

The essentials can be learned in a very few lessons and after they have been mastered, other abnormal and diseased conditions can be more easily recognized.

Marion Sims, a country doctor, was the father of American gynecology. Present day gynecologists could learn a great deal from his book published in 1855. He developed instruments and methods that did much to revolutionize the practice of his specialty the world over, but the point on which he laid the most stress, the proper, decent and refined handling of his women patients, has been to a great extent lost sight of and neglected by the profession of today.

After him came three great men, Emmett. Thomas and Munde, and others, who followed his ideals, and placed gynecology on a very high plane as a specialty.

Since their time, gynecology has been gradually taken over by the surgeon, who has paid but scant attention to the niceties and refinements which was most essential with them.

Three years ago, while preparing a paper to read before the Southern Surgical, I sent questionnaires to a number of surgeon gynecologists and to the professors of gynecology in all of the medical schools of the country.

I was shocked to find that comparatively few are using Sims' methods, and only a few colleges reported teaching the use of Sims' position and speculum.

A prominent gynecologist wrote as follows:

"I can remember the time when if you did not use a Sims' speculum, and were hauled into court for the treatment of a case, you would be condemned."

A New York surgeon stated:

"I am convinced that a very small proportion of surgeons, including gynecologists, have a correct idea of Sims' position, and that the speculum is practically never held correctly."

Another from New York states that he uses Sims' position at every office hour several times and has constantly advocated it. He also says, "*Remember that Sims' own hospital, the Woman's, rarely uses it now.*"

For one who is familiar with the refinement of Sims' methods, it is difficult to understand how the profession is willing to use the present more or less disgusting methods of examining women, and yet it is not hard to understand how the so-called "big men" in gynecology get by with it. Private patients who go to them steel themselves to submit to any ordeal, however disagreeable.

It is entirely different with the general practitioners. If we are to persuade them to take up gynecology, at least that part that is essential for the physical salvation of the women, they must use the most refined and least objectionable methods.

Dr. Sims never examined a woman patient without the presence of a third person, preferably a nurse. His dorsal, bimanual, examination was made under cover of a sheet. At its conclusion, the doctor retired, and the attendant turned the patient over on the left side, in the left latero-abdominal or Sims' position, and again covered her completely with a sheet. In inserting the speculum, Dr. Sims raised the sheet very slightly, and the exposure was reduced to a minimum, and was in no way objectionable to the patient.

This is the method still employed by those who are familiar with the work of Sims and his successors. It should be taught and demon-

strated in all medical schools, and should be used by all men doing gynecology.

The only objection that has ever been raised to it, is that it requires an attendant. An attendant being essential in all such work, that objection falls to the ground.

Outside of the decency of the method, it is far superior to the examination with speculum used in the dorsal position, in that it permits a very much better view of the vagina and cervix, and causes no discomfort to the patient.

If, then, we are to persuade the general practitioner to take up gynecology, they will have to adopt Sims' methods. Otherwise, the patients will not come to them.

The attendant need not be a trained nurse. The simple needed instruction for her can easily be gotten at the office of any doctor doing gynecology.

The necessary office equipment is not expensive, the greatest difficulty being the table. The old Chadwick table was ideal but it is not now being made.

The Allison Company, of Indianapolis, has a table which, with slight modifications, can be conveniently used. The writer has had the matter up with them and they are willing to get up any kind of table to meet the demand.

We hope that the medical colleges may be induced to pay more attention to teaching the students, a large majority of whom will become general practitioners, the practical essentials of gynecology, and especially teach them how to make gynecological examinations without difficulty.

The country is greatly in need of post-graduate medical schools. That need, however, is being more and more recognized, especially by the General Educational Board and its executive, Dr. Flexner, who deserves a crown of glory for the marvelous and most effective work done by him, along with other organizations in standardizing the medical schools of the country and greatly raising the standard of medical education. The writer has had the opportunity of talking with that great, though modest, man and finds him ready to aid in every possible way in the development of post-graduate schools, in various sections more accessible to the profession.

Extension courses will also take up work of this kind and thus help the busy doctor.

The anatomical and theoretical part looked after, gynecology is so simple that every general practitioner can easily take hold of it, be able then to detect many potentially dangerous conditions, give the requisite treatment in many other cases, and undoubtedly add largely to his income.

We must get into the habit of questioning our women patients who so often have serious conditions without realizing it.

The mother should be advised to watch her daughter, as to proper menstruation and freedom from pain and white discharge. She should also be instructed as to the care of the girl at her period time. It is easy to examine young women sufficiently by the rectum.

Women after confinement are really the neglected ones. They should always be examined within a reasonable time, and frequently need advice and treatment.

All women must be taught that leucorrhea is abnormal and often a sign of danger, that profuse and frequent menstruation means trouble and that any kind of a discharge after the menopause must be especially feared and investigated.

The general practitioners, especially in the country, have great influence with the people, and should have but little difficulty in persuading their women patients to look after these matters promptly and report for examination and treatment when necessary.

One of the greatest difficulties is that the doctors have so little spare time for such matters, but with improvements in roads they can greatly conserve their time and strength by educating their patients to more frequently make office visits. Those doctors who have developed their office work, both for gynecological and other cases, find it exceedingly satisfactory, are saving many unnecessary trips, and have greatly increased their income.

In addition to diagnosing the serious cases, and educating the patients in regard to danger signs, there is much that the general practitioner can do in the way of treatment. The scope of this paper would hardly allow of a full discussion of these matters, but a few may be mentioned for illustration.

Every woman at confinement is left with a lacerated cervix, which often either fails to heal or is quite slow in recovery. Douches, together with a few local applications, will usually suffice.

Similarly, from lack of rest or from lifting, these same cases frequently have temporary backward displacements, which may be rectified by position, tampons and douches.

It is strange how few people realize that douches do good only when the patient is lying down, the fluid not properly reaching the affected parts in the sitting position.

The much criticised and despised pessaries have their field of usefulness, though more or less limited. In inoperable cases they are often a boon to the afflicted, as well as in certain cases of temporary relaxation of the uterine supports. They are, however, contraindicated when tenderness is present, and where adhesions prevent an easy reduction of the dislocation.

It would be most helpful in this effort of trying to persuade the general practitioner to pay more attention to gynecology, if those of them present at this meeting would frankly and freely discuss the subject and give us their opinion and advice.

DISCUSSION

Dr. J. Kennedy Corss, *Newport News:* I enjoyed Dr. Leigh's paper, both for the facts that he has given us and for the little undercurrent that has gone through it and has gone through his life as I have seen it and as I am sure many others have: namely, the spirit of thinking not only of himself but of his patient and of trying to make things just a little easier for other physicians as they come in from all sides. In the earlier days, when there were not so many hospitals and the outside physician was more dependent on some surgeon than he is today, Dr. Leigh's hand was out to everyone.

The thought back of the paper is that the early diagnosis of cancerous conditions lies with the family physician, and that the better results are going to be achieved as much, if not more, by the family physician's learning to recognize them early as with the surgeon himself improving his technic. I cannot help referring to a case that scientifically may not advance the subject much and that I know Dr. Leigh has undoubtedly forgotten. Many years ago, before we had a hospital in Newport News, Dr. Leigh did much of my surgery for me. I referred to him a very early case of cancer. At his suggestion I had made a very early curettement and had the slides examined and sent the case over to him. I told the husband the serious nature of the case and he promptly built the first family vault which was erected in our cemetery. That vault stands there today. The woman is now living in Washington and is in good health today, and the husband, who so thoughtfully built that mausoleum, is now occupying it himself.

The schools of today are going ahead rapidly. For instance, the University of Pennsylvania, in its medical department, had something like five hundred applicants for the freshman class, the beginning, first-year class in medicine, from whom they selected one hundred. That one hundred are selected not from the first who register, but from their preliminary training and from the prospect of turning out the best men. They are giving, as are most of the leading medical schools today, not only the theoretical practice of gynecology, but the practical examinations and, in some schools, the operative work. So the young men coming out may not need that extra training, and the large number of successful post-graduate colleges are making it possible for any man to keep up successfully, at least to the diagnostic point. So I think Dr. Leigh's suggestion of making gynecologists of all the general practitioners, at least diagnosing gynecologists, is being sought after all over the country, and is rapidly being achieved.

As to the other two subjects, the Sims' position and the Sims' speculum, we are all using the Sims' speculum to some extent. I think the reason it is not being used so much is that the large number of radical operations have done away with the local applications, tampons, etc., which some years ago were the work of the gynecologist and to some extent of the surgeon.

Dr. Leigh, *closing the discussion:* Dr. Corss has very properly stated that very much less treatment is being done in gynecology nowadays, but often in examining the patient the Sims' position is so much superior and much less objectionable.

I do not expect a student to be taught to be a gynecologist, but I do expect him to be at home to some extent in making such examinations. The average medical man has a very misty idea about making vaginal examinations. I talked to one today who said what many others have said to me: "I don't care to do gynecology; I would rather send them to somebody else" But every medical man should be taught to make a proper examination, not only a digital, but a speculum examination as well, for that is necessary in very many cases.

ASEPTIC INTESTINAL RESECTION—REPORT OF CASES.*

By CARRINGTON WILLIAMS, M. D., F. A. C. S.,
McGuire Clinic.
Richmond, Va.

Resection and suture of intestine has always been a problem in surgery and the large number of methods described and advocated is good evidence that an entirely satisfactory technic has not been developed.

The end-to-end method of suture was recognized early as the physiological and therefore the ideal method, but it was found that so many of these operations were followed by infection, peritonitis, and death that the side-to-side technic was developed. The infection which occurred in the former method was both in the suture line and in the peritoneum. Infection in the suture line prevented healing and resulted in spilling the bowel contents into the peritoneal cavity, or, if drains were used and the infection became localized, a fecal fistula would result. Drains placed to the suture line interfere with the healing of the bowel and as a rule should not be used.

There are many obvious objections to the side-to-side anastomosis.

Early in the nineteenth century, before the days of asepsis, attempts were made to suture

*Read before the fifty-seventh annual meeting of the Medical Society of Virginia, at Norfolk, Va., October 12-15, 1926.

bowel without exposing the mucous membrane. Very little success followed these experiments.

About twenty years ago Dr. W. S. Halstead revived these experiments and many ingenious methods have been devised in his and other laboratories.

The most satisfactory technic is one which can be performed without the use of special instruments and without opening the lumen of the bowel. Such a technic was described as the basting stitch method by H. H. Kerr and the experimental work published in 1908[1]. Five years later he reported thirty-one cases operated on by this method. The description of this operation, quoted from Kerr, is as follows:

"Division of the intestinal walls is made between two narrow-bladed crushing clamps, placed first in actual contact and then slightly separated so that there is left between them a narrow crushed area, consisting practically only of serosa and fibrous coat. which may be divided by the knife or cautery.

"The basting stitch is a Cushing continuous stitch without knots, placed upon the clamped incision with the loops between the stitches crossing over the blades of the clamp. The first bite of the suture applied to either the free or mesenteric border is placed parallel to the axis of the gut; the intervening ones are parallel to the clamp and across the axis of the gut. When the clamp is removed and the stitch at the same time drawn tight, the edges of the incision are automatically inverted and held firmly pressed together in a straight line without any separation of the lips of the opening having occurred. The two incisions, so prepared, are then placed side by side, and are stitched together around the whole circumference of the intestinal tube or of the new operative opening that is to be established. When the last suture has been placed and tied, the basting stitches are cut short and withdrawn, the intestinal canal, or the new anastomotic stoma then instantly becoming patent. This completes the operation as far as the suture of the intestines is concerned. The lumen has not been opened and it has not been entered by any instrument or other object. The stoma becomes open only with the withdrawal of the basting threads. The steps of the operation are essentially the same whether circular, lateral, or end-to-side anastomosis is done.

"The operation so performed calls for no time consuming maneuvers and no more than ordinary manipulative skill. The basting stitches are as easily and as quickly placed as the purse-string suture used to turn in the stump of the appendix or grasp the Murphy button. Upon removal of the clamp the stitch is at once drawn tight by a single motion, and the incision, securely closed in a straight line, is then ready for suturing without further attention. The turning in of the cut edges which takes place is automatic and never requires the use of an instrument to assist it, as in the case of the purse-string suture.

"With the two basting stitches in place, intestinal suture becomes singularly free from its usual difficulties. Only a single assistant is ever needed, and even he may be readily dispensed with. The parts to be joined are held in the most convenient position and under perfect control, so that the stitching is done with surprising rapidity and ease.

"The troublesome eversion of the mucosa and the vermicular contractions of the muscular coats no longer exist. Approximation of serous surfaces to any desired extent and at a uniform distance from the margins of the incision is assured. The inversion of the cut edges presents a folded wall through which to pass the stitches, making precision in their application, with secure anchorage in the fibrous coat, particularly easy.

"Handling of the intestines is reduced to a minimum. The hands of the operator need scarcely touch them, and those of the assistant not at all.

"In end-to-end suturing the small triangular peritoneal defect at the mesenteric border is automatically obliterated by the basting stitch insuring apposition of serous surfaces at this point.

"A striking advantage of the method is seen when the two incisions to be joined happen to be of unequal length. In this case the longer one is simply puckered or 'gathered' in upon its basting thread until it corresponds in length with the shorter incision and the sutures are then applied. We have successfully united in this way without the slightest difficulty intestinal incisions, one of which was double the length of the other.

"This procedure has not been modified materially, though experience has taught us the importance of some of its steps.

"No special clamp is necessary for the crushing of the intestinal walls. The writer pre-

fers the ordinary curved Kelly clamp to the one made for the purpose.

"It is an advantage to place the clamps across the intestine at an angle of 45 degrees to the long axis of the bowel. This insures a stoma of twice the area of the one made by a transverse division. Then the amount of tissue to be invaginated and the width of the blades of the crushing clamps is of no moment, as the occurrence of obstruction from the formation of a diaphragm is well-nigh impossible. No angulation of the gut occurs after such anastomosis.

Case 1. Appearance of lower ileum and cecum following barium meal after operation.

"Pagenstecher thread is advised for the basting stitches and can be most easily applied on a curved French needle.

"One anastomosing suture of intestinal silk has always been found ample, even in pylorectomy or gastro-enterostomy."

I have modified this technic only by using fine silkworm gut for the basting stitch and by putting in two rows of sutures, the inner row interrupted chromic catgut and the outer row continuous silk. This method has been used in four cases:

Case 1. Male, aged 27, admitted to Stuart Circle Hospital with the diagnosis of acute appendicitis on December 9, 1924, and operated on the same day. An enormous appendix was found extending downward into the pelvis and forming a part of a large mass. This mass was delivered into the wound. The tremendously thick wall of the appendix extended into the head of the cecum where the wall including the ileocecal valve was about 1 cm. thick. It was obviously impossible to remove the appendix or to amputate the head

Case 1. Appearance of large bowel and cecum following barium enema after operation.

of the cecum without endangering the ileocecal connection; resection of the whole mass was therefore done by the method of Kerr and the lower ileum united end-to-end with the ascending colon. The lumen at the site of suture easily admitted the index finger invaginated through the ileum. The wound was closed without drainage. The patient made an uneventful convalescence except for a moderately severe wound infection, and has remained perfectly well. X-ray pictures after a barium meal

and a barium enema present a remarkably normal appearance.

Case 2. Male, aged 45, admitted to St. Philip's Hospital on March 22, 1925, with a strangulated inguinal hernia of 30 hours' duration. He was operated on at once and 73

Case 2. Appearance of the lower ileum and cecum following barium meal after operation.

inches of the lower ileum was found in the sac completely gangrenous. There was about two inches of healthy terminal ileum. This gangrenous segment was resected and the bowel anastomosed end-to-end by the method of Kerr. The lumen at the site of suture was somewhat smaller than the index finger but was quite satisfactory. The hernial sac was removed and the defect repaired. The convalescence was singularly uneventful; he did not vomit after operation, the bowels moved copiously on the fourth day, his temperature did not exceed 100°, and the pulse rate was under 100 throughout. X-ray examination after a barium meal showed a slight dilatation of the ileum above the anastomosis, but an adequate lumen at the site of union. The progress of the barium meal was normal; there was no retention in the small bowel or colon on the 24-hour plate.

Case 3. Male, infant three weeks of age, admitted to St. Philip's Hospital on February 12, 1926, with a strangulated inguinal hernia. The duration of the stangulation was not known. The baby was operated on at once and six inches of gangrenous gut was found in the sac. This was resected by the Kerr method and the wound closed with no attempt to repair the hernia. After the anastomosis the lumen at the site of suture was quite small, probably not more than 0.5 cm. in diameter. The baby died twelve hours after operation.

Case 4. Female, aged 66, admitted to St. Luke's Hospital on August 16, 1926, with complete obstruction of the upper sigmoid by a new growth. The abdomen was explored and a colostomy done above the growth. The growth was found to be an annular carcinoma. Three weeks later this growth was resected and an end-to-end anastomosis done by the method of Kerr. The lumen was of very satisfactory size and the resulting diaphragm quite small. Two weeks after this operation the colostomy was partially closed and the

Case 4. Appearance of sigmoid following barium enema before operation.

patient has had a number of normal stools. X-ray examination after injection of barium mixture through the colostomy shows the lumen at the site of anastomosis to be about ⅝ inch in diameter. This point can be palpated through the colostomy and easily admits the index finger. The mucous membrane healed

smoothly; there is no diaphragm but there is a moderate constriction.

Comment: These four cases illustrate three types of end-to-end anastomosis. In Case 1 the union was made between small bowel and colon, in Cases 2 and 3 between loops of small bowel, and in Case 4 between loops of large bowel.

The resection and suture was done in all without soiling the field by bowel contents or by exposing even the suture line to infection. The diaphragm formed by turning in the

Case 4. Appearance of sigmoid following barium enema after operation.

bowel end was of no consequence in three cases, while in Case 3 (infant of three weeks) the caliber of the bowel was so small that the diaphragm did materially interfere with the lumen at the site of anastomosis.

X-ray examination after operation in three cases shows satisfactory function in each case. The variation from the original technic of Kerr in using two rows of sutures increases the thickness of the diaphragm and probably is not necessary. It is essential to place the suture deeply into the bowel wall and it should catch the tough submucous layer.

Conclusion: 1. The end-to-end suture of bowel after resection is the physiological and therefore the ideal method of repair.

2. The aseptic method of Kerr is a very satisfactory technic. In common with other aseptic methods a diaphragm is formed at the site of suture, but this diaphragm is not sufficient to impair the function of the gut and later disappears.

3. This method should not be used when the caliber of the bowel is small.

References

Kerr, H. H., Surg., Gyn. & Obst., October, 1913.
Williams, C., Va. Med. Monthly, June, 1923.

1000 *West Grace Street.*

Discussion

Dr. J. Shelton Hopsley, *Richmond:* Dr. Williams is to be congratulated not only for his excellent results but for the care with which he reported the cases and followed them up afterwards. It is rather unusual to have such cases studied so carefully afterwards to find out the ultimate results.

I think this technic that he used is one of the most important changes in intestinal suturing in the last few years. It is founded on correct physiological principles. The colon and terminal ileum are literally teeming with bacteria, and the utmost precautions against infection must be taken. In the upper part of the intestines the conditions are quite different. In the normal stomach there are practically no bacteria, and in the upper part of the jejunum bacteria are few. In addition to that, the structures are clearly marked, and as a rule suturing can be more accurately done than in the lower bowel. In the upper part of the small bowel, then, there is no particular reason for not exposing the lumen, just as in a stomach operation; but because of a potential infection this should be avoided in the lower part of the small bowel and in the colon. In this operation the bowel is really not opened, in a bacteriological sense. The clamps are put on and the bowel opened with the cautery, thus preventing soiling. In my series of cases I have had only one death, which was in a woman who had had an enterostomy performed elsewhere for multiple abscesses, gangrene, etc. She was not a particularly good risk, but after treating her for some time I did resection of the loop containing the enterostomy. She was very fat. She died in a few days, and I found on post-mortem that I had not gotten a good hold with the sutures in the mesenteric border. I now dissect back the fatty tissues along the mesenteric border to provide a firm hold for the sutures in the bowel wall. I also clamp the bowel in different planes at the two ends in order that the two mesenteric borders may not oppose each other in the suturing.

In the upper intestine obstruction is more likely to be rapidly fatal than in the lower, and a larger lumen after resection is required. In the upper jejunum, then, I still use the open suture method, but in the lower bowel I think this method of Kerr, as described by Dr. Williams, is the best that can be employed.

THE ROENTGEN RAY TREATMENT OF SKIN CANCER AND ALLIED CONDITIONS.

By FRED M. HODGES, M. D., Richmond, Va.

Chronic localized lesions of the skin, especially of the face and neck, are of great importance on account of their frequency and the fact that the patient, often not realizing the seriousness of the lesion, expects a quick cure and a good cosmetic result. Every cancer has to begin as a very small lesion and in patients past middle age epitheliomas make up a large percentage of these chronic lesions. Most of the epitheliomata of the face, head, and neck are either of the basal-cell or squamous-cell type.

Mr. J. T. N. Degenerating angioma. Had always had a small growth. Began growing two and one-half years before treated. Treated January, 1925. No return.

The basal-cell type, which arises from the basal layer of the epidermis, is by far the most common. The squamous-cell type, arising from the squamous layer above the basal, is more highly malignant and often presents more difficulty in diagnosis. The prognosis in lesions of this type should always be guarded, as there is a tendency to early lymphatic involvement, and any small growth or chronic ulceration should be completely eradicated in the early stage of the disease.

Mr. T. B. A. Epithelioma. No biopsy made. Duration about two years. Treated February, 1924. No return.

Many of these lesions are associated with numerous keratoses and a seborrheic skin. This is not always true, yet a single keratosis may change to an epithelioma in a few weeks. It is quite evident that keratoses develop most frequently in those exposed to the elements, and with continued exposure or irritation these often become malignant. Chronic irritation is hardly more than a predisposing cause in the production of epithelioma, but once the malignant changes start in a keratosis, it is certain to increase the rate of growth. This is often seen in cases of rodent ulcers, which become much more active under inefficient treatment with cautery, freezing, roentgen ray, radium or surgery.

Miss M. E. W. Epithelioma. Duration two years. Treated February, 1922. No return.

In basal-cell cancer the malignancy consists of a tendency to extend to and destroy adjacent structures and a liability to recurrence when insufficiently treated. This lesion probably should not be looked upon as a growth of a low degree of malignancy, since it is practically always curable in the early stages; and yet, in the late stages, is frequently incurable and when a cure can be obtained marked deformities and a poor cosmetic result follow.

Mrs. J. M. Cornu cutaneum. Duration not known. Treated May, 1925. No return.

Any method of successful treatment of skin cancer, whether it be of basal or squamous-

cell origin, depends entirely upon the complete eradication of the lesion. We treat any skin epithelioma, basal-cell or squamous-cell, which does not require the removal of adjacent glands or other deeper tissues and where there is no definite involvement of cartilage or bone.

Mr. D. L. Epithelioma. Tissue not examined. Lesion extended up into inner canthus. Glass eye on other side. Duration three years. Treated March, 1925. No return.

The types of basal-cell epithelioma which present special difficulty are the very extensive ones, those involving cartilage or bone, and those involving the canthi or lids of the eyes. The very extensive ones are the result of neglect on the part of the patient or inadequate treatment. The successful eradication of an extensive epithelioma by any method will often involve the production of a rather marked deformity. The deformity following removal

Miss K. L. B. Basal cell epithelioma. Duration four years. Treated April, 1923. No return.

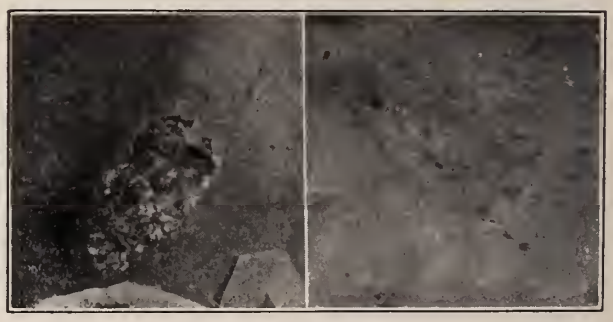
with the roentgen ray is usually less than that produced by any other method of treatment. This treatment causes no pain and the final results certainly appear to be as good as the results obtained by any other form of treatment.

Epitheliomas of the external ear are of special interest because they present considerable difficulty both in treatment and in diagnosis. The differential diagnosis between squamous and basal carcinoma of the ear is frequently impossible without a biopsy. It is clinically true that squamous epitheliomas of the ear are usually less malignant than those occurring elsewhere, in that their growth is slow and involvement of the neighboring lymph glands is late. When the cartilage is involved, removal

Mr. W. M. H. Probably infected basal-cell growth. Duration three years. Treated September, 1923. No return.

with an electric cautery or desiccation is probably the method of choice. Other lesions may be successfully treated with the roentgen ray.

Lesions of the canthi and eyelid must be handled with care because of the danger of injuring the eye and the probability of extension into the orbit if the growth is not entirely destroyed. They must be treated by some means which will obviate the destruction of the lid, because plastic surgery at best offers



Mr. W. T. S. Basal-cell epithelioma on back. Twelve years duration. Size 4x2½ inches. Treated July, 1925. No return.

but little where there has been much loss of tissue. In lesions around the eyes and over the bridge of the nose roentgen ray therapy is especially indicated, since the growth can practically always be permanently removed and with very little scar formation.

In the treatment of all skin cancer we believe the size, character, location, and thickness of the growth must determine the amount of irradiation to be used. A small superficial

basal-cell epithelioma will be cured with one erythema dose. A thick infiltrating basal-cell lesion or a squamous-cell growth of any size may require several erythema doses of unfiltered and filtered irradiation combined.

The growth is destroyed by the direct action of the ray on the cancer cells themselves and by the reaction in the surrounding normal tissues caused by the iradiation. In lesions less than approximately four centimeters in diameter, as a rule, the normal tissues will completely recover following very large doses of irradiation; but in larger areas large doses, especially if repeated, may cause an ulcer which will not heal and this must be guarded against when treating large growths. This is a rare complication and will not occur if the correct technic is used.

A biopsy is done only when we have a large lesion to deal with, since no matter whether it is of basal or squamous-cell origin we endeavor to give a large enough dose of x-rays to entirely eradicate the lesion. If a biopsy is done, it is followed immediately by irradiation; or if periosteum or bone is involved, the case is referred for surgery.

We believe that if the cases are carefully chosen and thoroughly treated, the roentgen ray offers as good results in the treatment of skin cancer as any other method and in lesions around the eyes and over the nose it is superior to any other method.

1000 *West Franklin Street.*

EXERCISES AND POSTURE IN RELATION TO DISEASE.*

By CUSTIS LEE HALL, M. D., Washington, D. C.
Professor of Orthopedic Surgery, Medical Department, George Washington University.

The importance of the consideration of the skeletal structure of the body in the study of disease, especially chronic disease, is the main point in the presentation of the following short resume of the subject I wish to present tonight.

It would be manifestly impossible in so short a time to go into great detail, or to consider minutely all the points in the mechanical structure of the most complicated and wonderful piece of mechanism, that of the human body.

It is evident that there are many able physicians who have studied the relations of the variations of the normal, so-called, body structure, as they influence the physiology, the chemistry, the metabolism, and the efficiency of the human body.

Indeed, it is increasingly evident that there is a growing recognition of this fact among the layman, as we see the rapid growth of the irregular practitioner, who claims that all body ills are due to some mechanical abnormality, to the exclusion of other factors, and disclaims the use of medicine and the knife in his cures. This is a fact that we must consider, and which will eventually influence our work to some extent. We will be doing better medicine if we bear in mind some of the facts which I wish to present to you this evening.

First, the so-called text-book type of the normal that we see in our anatomies is not so common as we suppose, and the studies of Bryant and Goldthwait bring out the fact that there are, broadly speaking, two general types of individual, each of which is subject to variations, or there may be mixed types. There is very little variation to be found in the text-books of anatomy in that which is called normal. The torso is of moderate length and of moderate breadth. The thorax is full, and moderately rounded; the upper abdomen is rounded and in circumference about the same as that taken just above the nipple. The costal border is formed in an angle of 70 to 90 degrees. The diaphragm is high and there is generous space under the ribs for the viscera. All the abdominal viscera except the lower portions of the colon with the sigmoid and part of the small intestine are above the umbilicus. Around the viscera, and representing a definite part of their support, as well as giving much protection from trauma to the sympathetic nerves, ganglia, and blood vessels, are well defined masses of fat. The lower abdomen is flat, while the upper abdomen is firm and rounded, there being no marked depression under or inside the edge of the ribs. The spine shows a mild curve forward in the lumbar region, with the inclination backward from the mid-lumbar, this resulting in the general inclination of the abdominal cavity of 30 degrees downward and forward from the perpendicular. The pelvic axis is inclined downward and backward about 60 degrees from the perpendicular, so that the two axes form nearly a right angle. The

*Read before the Medical Society of the District of Columbia, October 13, 1926.

stomach and liver are naturally attached to the diaphragm, and the suspensory ligament of the diaphragm is the pericardium, especially the right side, which is firmly attached to the anterior part of the low cervical spine.

Broadly speaking, there are two general types of individual, described as the herbivorous, or heavy, broad backed, stocky type, and the carnivorous, or the slender, narrow backed, or splanchnoptotic type. These types have been very fully described by Treves, Bryant, Glennard, Montessori and others. From the purely medical point of view, the recognition of these different types is important, since the types apparently carry their own potential disease. The tuberculous and the infections in general, certain nervous diseases and acute mental disorders, the hyperglandular disturbances, the progressive anemias, the atrophic arthritis, many of the intestinal disorders, are naturally associated with the slender type. Arteriosclerosis, hypertrophic arthritis, gout, diabetes (not the insipidus), chronic disease of the kidney, gall-stones, prostatic hypertrophy, the degenerative mental disorders, etc., are common in the heavy type.

When the body is used rightly, all of the structures are in such adjustment that there is no particular strain on any part. In this position the chest is held high and well expanded, the diaphragm is raised, and the breathing and heart action are performed most easily. The abdominal wall is firm and flat, and the shape of the abdominal cavity resembles an inverted pear, large and rounded above and small below. The ribs have only a small downward inclination. The sub-diaphragmatic space is ample to accommodate the viscera. In this position there is no undue pressure upon, or interference with pelvic viscera or with the large ganglia at the back of the abdomen and pelvis.

If the body is drooped or relaxed, so that the shoulders drag forward and downward, the whole body suffers, the weight is thrown improperly upon the feet, so that the arch must be strained, the knees are slightly sprung, which shows by the crepitating joints, the pelvis is changed in its inclination, with strain to the low back and the sacro-iliac joints. In this position the chest is necessarily lowered, the lungs are much less fully expanded, the diaphragm is depressed, the abdominal wall is relaxed, and the abdominal organs are forced downward and forward. Thus, the function of these organs is mechanically interfered with, which, as it becomes chronic, leads to the interference of proper circulation and the beginnings of pathologic changes.

Schloder and Weith carried on experiments showing that, in 1,254 school children, over 20 per cent showed albuminuria as the result of putting the patient in different postures. The cause must be attributed to a stasis of the renal circulation as well as a stasis in other parts of the body, producing analogous results in body tissues and in the blood stream itself. Increased lordosis in the long thin type also induces sagging of the kidneys. A definite change of symptoms may be associated with sagging of the kidneys, namely, kinks of the ureters, dilatation of the renal pelvis, hydronephrosis, pyelitis and obstruction of the ureter. These conditions were found in a study of 200 cases of ortho-static albuminuria by Peacock of the Veterans Bureau.

A large group of cases of general asthenia, loss of weight and digestive disturbance, are associated with poor posture. Nicholson has become convinced that, although correction of poor bodily mechanics takes time and patience, it will clear up many obscure conditions. It is important to examine all children with special reference to posture when they have poor appetites, tire easily, are constipated, irritable and under-nourished.

Swain has made note of the almost universal poor posture of cases of pulmonary tuberculosis in sanatoria, and recently there has been a general trend to realize that the contracted chest and rounded shoulders were factors to be corrected in these cases as a means of restoring the normal body balance and increasing resistance and overcoming fatigue. The use of exercises in arrested cases can be begun by simply hyper-extending the spine and so increasing the antero-posterior diameter of the chest and lifting the diaphragm in conjunction with deep breathing.

It is undoubtedly true that faulty posture maintained in industrial life becomes a fixed habit, and that careless lack of attention also allows poor posture to become an habitual position of a physically weak individual. These conditions may predispose to various chronic diseases. Although it is quite true that many persons live to be three score and ten, work hard, and never have a sick day, and yet are round shouldered, with sagging abdomen, and

pronated feet, the efficiency of these individuals must be lessened by these factors. Our attention needs to be called to these matters, but let us not stop there. Proper posture should be a lesson in every school, ranking with other lessons, and its acquirement made essential to promotion. Several large colleges for both men and women now study and correct all postural defects in the students, and our two great government military and naval schools turn out a splendid postural type of young men who are noted for their physical and mental efficiency. Watching them, one is impressed with their splendid carriage, and they stir the admiration when seen collectively for that reason.

Pain is a sign of abnormality or pathology and it is interesting to note the relation of pain to postural defects. Headache is a frequent symptom which may be traced to faulty posture of the cervical spine. This is accompanied by hypertension of the cervical muscles, early fatigue, aching in the shoulders and semi-rigidity of the neck. This type of case responds to massage and correction of the postural strain by the use of exercises, once the muscles have been relaxed. Incorrect posture of the head and neck may be followed by brachial pains and even weakness in the fingers, as described by Reijs. Rounding of the shoulders may produce a condition of chronic inflammation of the bursae of the scapula with constant pain in this region. Pain between the shoulders can be traced to faulty posture of the shoulder girdle and can be relieved by proper support and corrective exercises.

In the abdomen we find general visceroptosis as a sequela to faulty posture, with lordosis and sagging of the abdominal musculature. General abdominal discomfort and even pain can follow the strain incident to atony of the bowel and stretching of the colonic mesentery. Talbot and Brown, studying the effects of posture on the bodily functions of adults and children, have become convinced that vicious habitual postures inhibit normal intestinal function and induce constipation. Certain cases of cyclic vomiting, supposed generally to be due to some fault of innervation, have yielded rather strikingly to correction of the concomitant vicious posture by means of exercises and braces. The general improvement which takes place in their condition under postural treatment when different methods of feeding, etc., have failed is so extremely common as to be generally expected. In the consideration of general visceroptosis in conjunction with faulty posture, many observers believe that a large group of the arthritides can be traced to the faulty elimination and increased bacterial flora, the combination of which tends to break down joint resistance in the susceptible individual.

Painful backs are very common, especially in women, and the postural aspect is vitally important. Ruling out pelvic disease and inflammatory disease, the majority of these cases are postural in character. A relaxing of muscles and ligaments soon tends to cause painful spots in the low back, especially the sacro-iliac and lumbo-sacral articulations. The change in the position of the spine and pelvis may also cause the transverse processes of the fifth lumbar vertebra to impinge or irritate the surrounding tissues. Many cases of so-called sciatica can be traced to a faulty posture and its resulting nerve root irritation. The extreme of this condition is seen and recognized as an actual forward displacement of the fifth lumbar upon the ilium and designated by the name spondylolisthesis.

In some severe cases we may see pain in the sides and pelvis from actual impingement of the floating ribs upon the crest of the ilium, practically a collapse of the torso into the pelvis.

Painful and arthritic knees, when seen in conjunction with the general relaxation of poor posture, should receive first the correction of the static condition, and a large majority of the cases will respond by rapid improvement. It is well known that a pronated or sagging pair of feet will produce discomfort in ankles, legs, knees and back, due to faulty mechanical alignment and consequent muscle strain.

In the special fields of medicine a few generalized statements of interest are here formulated. In making these points it is not my desire to attribute all symptoms to postural defects, but to bring the important influence of posture to your attention in these groups.

Goldthwait, in his article on an anatomical and mechanistic conception of disease, calls attention to these points. In thoracic conditions, not only should the disease of the organ itself be considered, but the conditions under which the special organ works should also be considered. In the slender type, since the

chest is used at full expiration and since the movements of the diaphragm are also restricted, the lungs should not be expected to become strong or work rightly until the conditions upon which the proper action of the lungs are made possible. In the tubercular patient it should be made a part of our work to see that the body is so used and supported that the chest is raised, and the drag upon the diaphragm removed so that the normal rhythm of respiration is possible, as much as to see that the patient is given fresh air. The air can not get into the lungs until the mechanical elements are recognized. The same is true of the heart action, if the chest is low, and the diaphragm depressed so that the suspensory ligament, which is the pericardium, is stretched. Not only must the heart labor at a disadvantage from its immediate environment, but the interference with the diaphragmatic action must be of much importance, and for only one illustration, the unloading of the abdominal veins, which is dependent so much upon the diaphragm, must be disturbed. When the mechanics of the heart action is considered, one is not surprised to find such work as the article by Herz upon "Interference with the Heart Action by Stooping."

In considering the blood diseases, especially the profound anemias, which cannot be explained in other ways, the position of the spleen or the effect which other organs may have upon its function should be considered.

The stomach and liver cannot function properly if the ribs are contracted and narrowed so that there is practically no sub-diaphragmatic space, and the pelvic organs may be congested and displaced with the loose abdominal organs crowded into the lower abdomen and pelvis. With epilepsy, recent literature suggests that many cases are due to gastro-intestinal disturbances,—that it is not unusual to see the convulsions cease with the change of body position, which may relieve visceral pressure upon the ganglia and blood vessels of the upper abdomen.

Faulty posture, either general or localized, with attendant symptoms, can be corrected by exercises to restore body balance and efficiency. Each case represents its own complicated problem and must be solved individually with due attention to all its elements, and the results in suitable cases are more than satisfactory in the chronic patient especially, who has failed to find relief by the employment of other measures. Due recognition of the fact is desired that co-operation of the various specialists with the orthopedist will aid in getting better results in treating patients with a faulty posture. Dr. Roger I. Lee has placed his views on the matter in the medical literature in an article entitled "Some Confessions of an Internist Regarding Body Mechanics." As a result of his studies of the student body of Harvard, he came to these conclusions. He found that positive organic disease was relatively small—under 5 per cent. However, it was perfectly evident that, although 95 per cent of the college population was organically sound, nevertheless, 95 per cent were not entirely robust healthy individuals. Attention was, therefore, brought to the various physiologic systems of the body for the purpose of attempting to evaluate the well-being of the individual as a whole. Among these systems the question of body mechanics arose. Experience has shown that functional disturbances of other systems, for example, vasomotor instability, or even nervous instability, tended to be associated with poor function in body mechanics. Lee ends his article by saying that it must be emphasized that important though body mechanics is, it is only one of the systems of the human body, and any evaluation that confines itself to one system will leave out of consideration may factors that may be of paramount importance.

1801 *Eye Street, Northwest.*

THE ETIOLOGY AND TREATMENT OF DIARRHOEAS OF INFANCY.*

By JAS. W. REED, M. D., Norfolk, Va.

The numerous classifications of "Diarrhoeas of Infancy" based upon the pathology, etiology and clinical data have provided a great variety of therapeutic procedures. Rarely, except in the truly infectious types, which fortunately are the least common cases seen, do definite changes develop in the intestinal mucosa.

Pathology alone, therefore, cannot provide us with a proper index for treatment, the trouble being not so much in the intestinal walls as in the intestinal contents. Nor will a classification based upon symptoms alone provide a definite basis for treatment. Etiologically,

*Read before the Norfolk County Medical Society, October 25, 1926.

the situation may be more intelligently approached; certain types of bacteria are held responsible for the condition. This is only true of a very small percentage of cases, those already referred to as the "Infectious Types." The principal food elements, fats, carbohydrates and protein intolerance cannot alone form a basis for definite treatment. A combination of the elements, however, especially of the latter two, bacteria and food, provides the most rational explanation, and points the way for an intelligent treatment. This is further upheld by the following explanation: bacteria require certain elements for their growth and activity, namely, heat, moisture, and nutrition, these elements being found in the intestinal tract only in the foods present. These same bacteria with certain enzymatic agents assist in the digestion or disintegration of the food. The disintegration of the fats and sugars produces an acid medium in which only acid producing organisms will thrive. The disintegration of protein produces an alkaline medium in which only alkali producing organisms will thrive. A correct balance between these indicates normality.

If excessive acidity or alkalinity persists for any length of time, causing irritation of the intestinal mucosa, diarrhoeas and systemic disturbances result. This proves that the real exciting factor is the intestinal contents, and that by means of proper food manipulations we can both prevent and cure the active intestinal diarrhoeas. This is borne out chemically.

But, now, how can we determine whether the cause is excessive alkalinity or excessive acidity? Anything which increases peristalis enough to cause diarrhoea will necessarily interfere with digestion of the food elements simply by hurrying them through the intestinal tract. So, if sugar caused the diarrhoea, we must expect to find undigested proteid and fats in the stools also. I therefore believe a study of the reaction of the stools will provide the greatest assistance in diagnosing and treating these cases. Excessive acidity, *the most common occurrence* in diarrhoea indicates the withdrawal of fats and sugars from the diet and the feeding of large amounts of easily digested protein. Therapeutically, therefore, I classify the diarrhoeas as, first, noninfectious types, caused by the improper proportion of fats, carbohydrates and proteins; secondly, the infectious types brought about by germ activity. For convenience of a more comprehensive description I further divide the infectious type into (1) primary, and (2) secondary. The primary originate in the intestinal tract proper; the secondary follow acute infections of the air passages,—middle ear, mastoid, tonsils, and focal infections generally. I am informed by Dr. Brady, of St. Louis, and Dr. Irish, of Chicago, that these metastatic infectious diarrhoeas are quite prevalent in their cities, particularly during the winter months.

To treat the most common variety of noninfectious types, Finkelstein provides us with two fundamental procedures: First, a hunger period of eighteen to twenty-four hours in order to rest the already over-active gut and thereby increase its digestive functions, and second, the use of easily digested protein. (However, when I was in his clinic during the past summer, I heard Dr. Finkelstein express himself as favoring a much shorter starvation period. In his own language, "to starve a child more than twelve or eighteen hours results in a greater loss than gain.")

In treating these cases I follow this general routine. I always administer from ¼ to ½ ounce of castor oil immediately. If vomiting is present, a single gastric lavage is followed in half an hour by castor oil. Not infrequently the oil may be successfully administered through the lavage tube after the stomach has been thoroughly washed. The next step, the hunger period *must be strictly enforced.* This should last from eighteen to twenty-four hours, depending, of course, upon the severity of the symptoms in the individual case. Usually, eighteen hours is sufficient. Finkelstein employs castor oil only in convulsive seizures, where quick action is paramount. He rather prefers a milder laxative such as milk of magnesia, one drachm, three times a day.

During this time only distilled water or weak tea, each pint sweetened with one grain of saccharine, should be given. The water or tea should be administered freely, either cool or warm. This provides fluid to combat the impending acidosis and the tea is also slightly astringent. The milk of magnesia hastens alkalinity. If the child is very dehydrated, normal saline solution by hypodermoclysis or intravenously should be given. In extreme infectious types, the intraperitoneal route is the one of choice. If blood is present in the stools one-half per cent tannic acid solution

100° F. should be allowed to run in and out of the bowel once a day. For high temperatures, I employ an ice-pack to the head, repeated cool sponging and alcohol rubs. The pain and rectal tenesmus should be controlled by *small* doses of camphorated tincture of opium.

The next step is feeding. We must necessarily provide food upon which only alkalinizing micro-organisms will thrive, in order that the end products in the intestine may produce neutrality or even alkalinity. *Such food is protein.*

Ordinary cow's milk curd is indigestible to a high degree. Finkelstein first provided us with a modification called albumen milk. This is difficult to prepare at home and is not available commercially in liquid form. Stoelizner suggested a dried preparation of albumen milk which is known as "Larosan."

Since then several manufacturers have put such a dried soluble-calcium caseinate on the market. The preparation I prefer and use is "Casec" made by Mead Johnson and Company, of Evansville, Ind. My method of procedure following the hunger period is to start the infant on a weak formula as follows: pint mixture, skimmed milk 4 oz., boiled water 12 oz., Casec 1 oz., pinch of salt, and 1 gr. of saccharine. The water, milk and salt are mixed and then the casec added very slowly, while stirring slowly to prevent lumping. This should then be brought just to the boiling point, allowed to cool, and the saccharine added. Sufficient quantity should be prepared for six feedings and the infant should be fed as many ounces of this mixture every three hours as the infant is months old, but never more than eight ounces. Of course, this should be warmed before each feeding. Within twenty-four to forty-eight hours after the feeding is begun, the infant will pass a thick yellowish stool, and the reaction will be alkaline. I then daily replace two ounces of water by two ounces of skimmed milk until a half and half solution is reached. Next, I begin to add carbohydrates slowly, by replacing ¼ ounce Casec every two days with ¼ ounce of Dextri-Maltose, preferably Dextri-Maltose number one. As a rule, this is tolerated. When one ounce of Dextri-Maltose is used, the Casec, of course, should be discontinued.

If at first the carbohydrate is not tolerated, it should be removed and the Casec should be re-added for another two or three days, when the carbohydrates should be started again. When the ounce of carbohydrates is tolerated, the skimmed milk should be gradually replaced by whole milk, until a strength suitable to the individual is reached.

If the infant is beyond six months of age, it is good at this point to add once a day a small amount of baked mashed potato or mashed greens, such as spinach, to the diet. Relapses should be treated the same as original attacks.

Of course, you cannot always follow a set rule. The fundamental idea is to start the milk weak, with easily digested proteins and then gradually strengthen it.

As before mentioned, this group is *by far* the more common, excessive alkalinity and the proteins being rarely the cause, and I am sure that if the general practitioner will learn to differentiate and treat these cases accordingly, many babies can be saved each year, and many stubborn cases of infantile diarrhoea can be prevented.

The treatment of the less common type, the "Infectious Diarrhoeas" differs very little from that of the non-infectious. The general management is the same but one must necessarily proceed more cautiously in introducing and increasing the milk and carbohydrates for reasons that are obvious.

Primary infections, meaning those which originate in the intestinal tract proper, should be cared for in the following manner: large doses of alkalies, namely, milk of magnesia and sodium bicarbonate, should be given. The object of this is to neutralize or render the intestinal contents alkaline. Stimulants such as caffeine sodium benzoate, one-tenth to one-half a grain four times daily, or camphor in oil one-fourth to 1 c.c. every four hours, are indicated in the most severe cases. (Digalen-Roche may also be administered by "hypo" in selected cases). Transfusion plays an important role in some instances. This, however, can only be resorted to in institutional cases. The result of treatment in these cases is not so good as in the non-infectious cases, and many infants succumb to the toxic effects.

In addition to the treatment as outlined, it is interesting to note that Czerny, of Berlin, claims that acid milk is the most progressive thing resorted to in the past forty years in treating diarrhoea. He dilutes butter milk with flour water, dilution being made to offset the purin bodies. Finkelstein uses lactic

acid milk in selected cases, but not as a routine. He recommends the use of cooked butter. His theory is that the cooking volatilizes the butyric acid, thus rendering the fats nutritious but harmless. Mall, of Vienna, particularly favors the use of almond milk. This, however, cannot be produced in this country at present. Almonds in Austria are as plentiful as peanuts in Suffolk, Virginia.

Summary

I wish to stress the salient points in the treatment to be remembered:

1. Castor oil if vomiting is not present, or lavage followed in one-half hour by castor oil if vomiting is present.
2. Hunger period of twelve to eighteen hours during which time only water or saccharinated tea should be given.
3. Hydrotherapy for fever.
4. Introduction of saline solution into the body if there is much dehydration or acidosis is present. The intraperitoneal route is the one of choice for obvious reasons.
5. Alkalies administered until stools are alkaline in reaction.
6. Daily irrigations—½ per cent of tannic acid solution until blood disappears from the stools.
7. Camphorated tincture of opium for pain and rectal tenesmus—sparingly but freely enough to make the infant comfortable.
8. The feeding begun after the hunger period with a diluted skim milk mixture sweetened with saccharine and containing casec. When stools begin to be thick, yellow and alkaline in reaction, begin gradually to increase the milk, then gradually add carbohydrates in the form of Dextri-Maltose, preferably No. 1, this to replace the casec. Feeding should then be increased until a proper mixture is reached for the age and weight of the individual under care.
9. No case can be intelligently and successfully treated without due regard for the two basic factors—sustaining the child with sufficient food and stimulating the heart when indicated.
10. Do not starve them.

In conclusion, acute infectious diarrhoea, with its disastrous death toll, is not unlike the disease of which we heard so much in Von Pirquet's clinic—"Tuberculosis in Infancy." However, it does differ from this aspect. Let a child die of tuberculosis in any form and the family will sit with bowed heads in humble submission to the fact that "God's will has been done." But, on the other hand, let this self-same rosy cheeked, blue eyed boy or girl succumb to an infectious diarrhoea—whether it be your patient or mine—after all has been said and done, they will look at one another in utter grief, disgust and disappointment and wonder if the proper talent has been consulted. Hence, it behooves us, as general practitioners, to co-operate with our specialists in this particular line in order that these little patients may have what they are justly due—the best that can be had.

400 *First View Street.*

ORTHOPEDIC SURGERY AS APPLIED TO THE CRIPPLE CHILD.*

By BERNARD H. KYLE, B. S., M. D., F. A. C. S.,
Lynchburg, Va.

Orthopedic surgery does not entirely remove a disability; it does change a bad condition into one that is better. In correcting deformities one has to deal with surgery of the soft parts and surgery of bones. Following infantile paralysis, operative measures are not undertaken for two years after the acute attack has subsided. The first year is allotted to absolute rest,—the second, to allow the maximum amount of deformity to occur. Before determining the type of operation to be done, a thorough muscle test should be made of the limb to be operated.

Under this classification tenotomies are not included, as tenotomies are done to prevent deformities rather than to correct deformities.

Muscle transplantation, linked with muscle re-education, offers the greatest field in surgery of the soft parts. Without muscle re-education the transplantation of muscles is futile. This, of course, must be under a most skillful physiotherapist, as here one is re-educating muscles and brain cells, that a muscle transplanted from a flexor group to that of an extensor may extend when it was originally intended to flex. For those who oppose muscle transplantation and say, "why transplant a muscle when it has a negative action in its new position," we must consider that strong muscles tending to flex against poor ones that are tending to extend, are working for a positive evil. For example: when a strong flexor, not desired, is transplanted as an extensor, and

*Read as part of a symposium on Diseases of Childhood before the South Piedmont Medical Society, at South Boston, Va., November 16, 1926.

though it fails to extend, it acts for negative good. For the sake of brevity the following terms will be used:

Positive Evil for Negative Good;
Postive Evil for Positive Good.

Using the above formula, it is most commendable to transplant a strong flexor, acting for evil, as an extensor acting for negative good. The mere fact that the flexor producing deformity has been removed accomplishes the purpose.

Transplantation at the Hip

Here is found one of our most important operations, Soutter's operation for flexion deformity. Dr. Soutter, of Boston, clears away all soft parts from the anterior superior spine down to and including the inferior spine. It has been suggested that hip flexion might be overcome by operation just above the knee, dividing the fascia, reducing the flexion, and at the same time transplanting the anterior part of the fascia lata, rolled with raw surface inside, into a weak quadriceps. Transplantation at the posterior group of the hip has been more difficult. At present no operation that has been popular has been done for weak gluteals. Great possibilities may rest in transplantation of the erector spinae for weak gluteals, at the same time this must be approached with caution because an important muscle of the spine has been taken away and may result in marked scoliosis. I merely mention the possibility of such an operation.

At the Knee

Transplantation of one head of the gastrocnemius anteriorly is of value. Here, again, we change a positive evil into a negative good, as the transplanted head of the gastrocnemius is too short to act as positive extension. The desire is merely to get rid of its former action. The extensor fascia femoris may be transplanted into a weak or paralyzed quadriceps or the external hamstring brought forward for weak or paralyzed quadriceps.

At the Ankle and Foot

The possibilities here for good results are numerous. For toe-drop, when weakness exists in the extensor longus digitorum accompanied by cock-up toes, the distal ends of the extensors are transplanted into the distal heads of the metatarsals with excellent results. For valgus of the great toe, the distal end of the proprius hallucis may be transplanted into the distal head of the first metatarsal bone, with good results. It is wise in doing this operation to arthrodise the first and second phalangeal bones to prevent a tipping down of the end of the great toe which curiously occurs unless this is done. For valgus deformity, one of the peroneii, preferably the longus, may be transplanted into the insertion of the anterior tibial if this be weak, or it may come only to the mid-dorsum of the foot.

For varus deformity, the anterior tibial may be transplanted into the dorsum of the foot or into the peroneii, depending upon the pull needed. For weak gastrocnemius, the peroneus brevis and the posterior tibial may be transplanted, one or both, into the tendon of the gastrocnemius.

Cavus Deformity

Transplantation of the extensor longus digitorum into the distal heads of the metatarsal bones may be done after division of all soft parts subperiosteally from the anterior inferior surface of the os-calcis, thereby allowing all soft parts to slide forward.

There are similar possibilities of transplantation of the upper extremities.

Once more,—all transplantations are futile unless followed by muscle re-education over the necessary period of time.

Surgery of Bones

The Spine

In spinal deformity where cases have not shown improvement or have become worse after treatment by exercises or mechanical support, fusion of the spine may be indicated. This operation should never be done on a child except as a last resort. However, I do believe that it may be indicated in cases of infantile paralysis where there is extensive loss of muscle power too high on the spine to be supported by jackets or where muscle training has failed to sufficiently restore the muscle power to support the spine. The older the child, the less the operative risk. This operation may be considered in cases of marked scoliosis of the upper dorsal region, where the deformity is too high to be held by a jacket, or in malformation of the upper spine accompanied by marked scoliosis with the above condition. The operation of choice is the Hibbs' or some modification of the Hibbs'.

Hip Joint

We all know how easily this joint is ankylosed by disease and how difficult it is to produce ankylosis by surgical interference. At the present time there is no satisfactory operation for producing ankylosis of the hip joint.

Knee Joint

Arthrodesis of a frail knee is indicated provided the hip flexors are good, accompanied by a stable ankle. It is better to have a stiff knee than wear a brace all of one's life. With a hack saw, divide the cartilage from the upper end of the tibia and lower end of the femur. Where the cartilage stops and the bone begins is a pale pink line; if the saw is made to follow this line, no injury is done to the epiphysis of either bone. After fusion of the bones has occurred, there will exist one epiphyseal line between the hip and the ankle instead of two, from which growth of the bones will occur. This operation gives very satisfactory results.

Bow legs or knock knees are corrected by osteoclasis when the tibia is involved, and by osteotomy when the femur is involved. When both the lower and upper legs are involved, but one operation should be done at a time. This operation should never be done without first ascertaining if the acute rachitic condition has healed. Radiogram of the epiphysis at the knee will reveal this information.

The Foot

Astragalectomy is not so popular as in the past, because its removal shortens an already short leg. For a flail foot Hoke's stabilization is the operation of choice.

For club foot with tibial torsion, it is advisable first to do an osteotomy through the shaft of the tibia, establish alignment of leg, and, after firm union, correct the foot. This operation is most satisfactory.

309 *Medical Arts Building.*

HUNNER'S ULCER.*

By JAMES M. FADELEY, M. D., Washington, D. C.

In 1913, Dr. G. L. Hunner, of Baltimore, first described a lesion of the urinary bladder which proved to be the cause of vesical irritability in a certain type of cases which had, until that time, been classified as "bladder neuroses." These cases were characterized by great frequency of micturition and severe pain in the suprapubic region, occurring chiefly when the bladder was distended. This was greatly intensified on urination, especially at the beginning of the act. In spite of the severity of the symptoms, urinalysis usually revealed no evidence of urologic disorder. Occasionally a few leucocytes or r. b. c. were found and cystoscopic examination showed nothing except, in a few cases, a reddened area, situated on the anterior wall of the bladder. Thorough examination of the other G. U. organs resulting negatively, patients so afflicted were many times classed as psycho-neurotics and passed along to the neuropsychiatrist for his advice. In short, the symptoms were entirely out of proportion to any demonstrable urologic lesion.

Hunner's prolonged study of several of such cases proved that these reddened areas, sometimes superficially denuded of epithelium, present in a few instances, could be seen in practically all cases sooner or later if a sufficient number of cystoscopic examinations were carried out, this sign being shown to be transitory and persisting for only a few hours at a time. It was also thought that these areas of injection or ulceration revealed the location of a definite pathological process in the bladder wall, and this, as well, has proven true. The lesion present is described as a localized fibrosis of the submucosa which at times involves the muscular coats as well. Accompanying changes include round cell infiltration, congestion and dilatation of vessels, and extravasation of blood into the tissues as in other forms of cystitis.

Other names for this condition are "elusive ulcer," due to the tendency of the visible lesion to appear and disappear quickly, localized interstitial cystitis, pan-mural cystitis, and submucous cystitis. The last designation seems most logical as it describes the lesion accurately, but "Hunner's ulcer" is by far the most frequently used and is not easily supplanted.

The etiology of this condition remains unsolved, the most generally accepted theory being that it is the result of hematogenous infection of the bladder wall. Rosenow and Hinman have produced these lesions in animals by intravenous injection of streptococci. Age, sex, race, etc., seem to have no influence, nor does previous urinary infection.

Pain and frequency of urination are the pre-

*Read before the Medical Society of the District of Columbia, October 13, 1926.

dominant symptoms and are usually very severe. Pain, as before stated, is aggravated by distention of the bladder, initiation of the act of micturition, and by muscular activity. In well developed cases, even the slight jarring of the body incident to walking may incite intense agony. Frequency and urgency are present day and night and may be so severe as to amount to incontinence, there being an almost constant desire to void. Hematuria is not a constant symptom, but is noted in about 25 per cent of cases, the hemorrhage occurring as the result of separation of the adherent mucosa covering the affected area during distention.

The history is most important in leading to a diagnosis of Hunner's ulcer. While the symptoms cannot be said to be pathognomonic, still a story of long standing frequency with suprapubic pain preceding urination and negative urinary findings is very significant and warrants repeated cystoscopy in an effort to locate the cause. The cystoscopic findings include intense pain and discomfort on passage of the instrument, marked diminution in bladder capacity, with pronounced suprapubic pain when fluid is introduced beyond a certain amount. Appearance of the lesion varies greatly, in many cases only a small area of slightly or intensely injected mucosa being noticed; occasionally the centre of the area appears puckered and lustreless, the periphery fiery red. In a small percentage definite ulceration is present, the ulcer being shallow, irregular in outline, covered by a thin mucopurulent membrane and surrounded by an area of hyperemia.

Distinct change in the appearance has been noted during cystoscopy, a slightly reddened area becoming intensely red, raised above the surface of the surrounding mucosa and edematous. Over-distention of the bladder frequently brings about fissure formation and bleeding which can be observed through the cystoscope, and it is upon this point that a positive diagnosis usually depends.

Hunner ulcer occurs singly in a great majority of instances, but cases have been reported in which three or more of these areas were present. They occur most commonly on the anterior wall of the bladder, but may be found in any location and occasionally involve the whole bladder.

Non-operative treatment, consisting of gradual hydraulic dilatation of the bladder, instillations and irrigations, deep cauterization with silver nitrate or the fulguration wire, has proved only temporarily beneficial. The only hope of permanent relief lies in radical extirpation of the involved portion of the bladder wall, and this should be carried out in all cases unless definite contraindication exists.

W. R. A., a small, well nouriished, white male, age 22, was admitted to Mt. Alto Veterans Hospial, March 13, 1925, complaining of severe pain in the bladder region, constant desire to urinate and hematuria. Had been treated in several hospitals since May, 1922, for osteomyelitis of upper third of left femur, the result of an accidental explosion of schrapnel shell at Camp Bragg, N. C. Had gonorrhoeal infection seventeen months previously, complicated by right epididymitis, from which he had never entirely recovered. Denied luetic infection.

Frequency of urination, diurnal and nocturnal, began about eight months previously while recovering from an operation for osteomyelitis. Pain in the suprapubic region made its appearance shortly afterward and steadily became worse, being most annoying when the bladder was full and relieved only partially on urination. There was slight incontinence at times during the night and occasionally slight terminal hematuria. At the time of admission pain was constant and very severe, desire to void constant and a few drops of bloody urine could be seen escaping from the urethra with each contraction of the bladder, which was accompanied by an agonizing paroxysm of pain. He was put to bed, morphine administered, heat applied, and sandalwood oil with soda bicarbonate given every four hours. At the end of about three days symptoms had been to some degree controlled and examination of the G. U. tract begun.

Kidney and inguinal regions negative on inspection and palpation. Very great tenderness elicited on pressure over suprapubic region.

External genitalia showed slight muco-purulent urethral discharge and thickening of the globus minor of right epididymis. Many pus cells and miscellaneous organisms were shown to be present on examination of a smear, but no gonococci were found.

Urine.—G1 very cloudy with shreds; G2 same, with traces of blood; G3 could not be obtained.

Rectal Examination.—No fissures or hemorrhoids present; anal sphincter of good tone.

Prostate gland about normal in size and shape; median groove wide and shallow. Left lobe slightly rounded but of normal elastic consistency throughout; left seminal vesicle could not be palpated. Right lobe rounded, indurated throughout and adherent. Right seminal vesicle indurated and adherent. Expression from the prostate consisted almost entirely of pus.

X-ray examination of the kidneys, ureters, and bladder, negative for calculi and other abnormality. Combined renal function test, 2 hours, 48 per cent.

Blood Examination.—Wassermann neg.. r. b. c. 3,981,000; w. b. c. 7,450; hemoglob. 78 per cent.

Urinalyses.—Albumen present in all specimens, 1 to 4 plus; sugar negative; r. b. c. varied from occasional to very many; w. b. c. always very many. Search for T. B. negative in all specimens: Guniea Pig inoculation on two occasions negative. Cultures showed pure culture of B. coli in all specimens examined.

X-ray, physical examination and repeated sputum examination negative for pulmonary tuberculosis.

Cystoscopy.—No obstruction to the passage of a No. 26 F. cystoscope, but considerable pain was experienced in spite of the use of a 5 per cent solution of novocain as anaesthetic. Bladder capacity 60 c.c., no residual urine present, bladder musculature hypertonic.

Inspection of the mucosa showed an intensely reddened area in the vault, irregularly circular in shape and about 3 to 4 c.m. in diameter. Redness was most pronounced in the centre and gradually faded out toward the periphery. Adherent about the centre of the area was a small web-like mass of necrotic tissue and this was surrounded by an areola of edema. The remainder of the mucosa was slightly injected throughout; ureteral orifices apparently normal, internal sphincter margin regular in outline and showed no abnormality. Addition of 30 c.c. of solution to the 60 c.c. already contained in the bladder provoked great pain and brought about bleeding from the centre of the inflamed area which appeared from behind the shred of necrotic tissue which undoubtedly obscured the actual fissure. Ureters were catheterized, normal urine obtained from each and a divided renal function test done. Phthalein appeared from each kidney in four minutes, and 15 per cent excreted by each in fifteen minutes.

Daily bladder irrigations and instillations were instituted for the purpose of clearing up as much as possible the colon bacillus infection, and at the same time dilatation was carried out. At the end of two weeks the urine was macroscopically clear but a few leucocytes and r. b. c. could always be found microscopically. The dilatation was apparently without effect. At no time was it possible to inject more than 100 c.c. of solution, and no diminution in frequency or pain could be noticed, although the infection had cleared up in a satisfactory manner.

Operation.—Bladder was easily distended to 200 c.c. after anaesthesia, and was exposed through the usual midline incision. The peritoneum was found to be firmly adherent to the anterior wall and was retracted with great difficulty. The bladder wall was incised at a point about 2 cm. to the left of the midline and the interior explored. An elliptically-shaped portion of the anterior wall containing the lesion was excised, the edges of the wound sutured with plain cat-gut No. 2, and a large drainage tube fastened in the superior angle of the wound. Fascia and skin were closed about the tube in the usual manner, a Penrose drain left in the prevesicle space. Drainage was removed at the end of two days, the urine having cleared of blood, and a retention catheter introduced. This was discontinued at the end of six days, the wound having made satisfactory progress, and the patient allowed out of bed at the end of ten days.

Improvement was rapid, there was no pain on filling of the bladder, capacity steadily increased to 200 c.c., and frequency reduced to about normal in four weeks from the time of operation. At that time vigorous treatment directed against the chronic prostatitis and seminal vesiculitis was begun and progressed satisfactorily until time of discharge from the hospital. He has been under observation as an out-patient since, and reports that there has been no suggestion of a return of the symptoms at any time.

Pathologic Report of Specimen by Hygienic Laboratory.—"Sections show extensive deposit of fibrous tissue in the submucosa; the epithelial covering is for the most part gone but what remains shows evidence of hemorrhage, both old and recent. The muscle coat shows evidence of beginning connective deposit and marked round cell infiltration. There is nothing suggestive of tuberculosis."

The second case presented much the same history except that symptoms had not been so severe, but had persisted over a much longer period—about four years. Examination revealed the same type of bladder lesion, but it was smaller and far more innocent in appearance. However, bladder capacity was only 75 c.c., and injection of an additional 25 c.c. produced slight hemorrhage from a pin-point abrasion in the centre of the reddened area. There was no urinary infection, repeated culture being sterile. An occasional r. b. c. constituted the abnormal urinary findings. Wassermann was four plus and operation was not advised until after it was demonstrated that antiluetic treatment had no influence on the bladder condition.

Operation was carried out as in Case 1, the result being very similar. Pathological examination of the removed tissue corroborated the diagnosis.

1737 *H Street, Northwest.*

Miscellaneous

Notes on Tularaemia.

This disease was first discovered by McCoy and Chapin fifteen years ago in California. Later it was found in Utah, then in Cincinnati, and finally in 1921 in Washington, D. C. It has now been recognized in thirty-two states and in Japan.

The first case to be recognized in Virginia occurred in 1924 in Richmond. Since this occurrence cases have been found in Lee County, Essex County, Winchester, Richmond and vicinity. In view of this wide distribution, it seems probable that the disease occurs throughout the State only it is not generally recognized.

While the disease is often serious it is rarely fatal, though in Lee County three deaths occurred in one family. This, however, was most unusual. Usually the disease causes several weeks loss of time, but often runs for several months.

The disease is primarily an infection of rodents and secondarily of man. In Virginia the disease occurs in wild rabbits which are the source of the infection. Persons dressing infected rabbits become infected usually through some open place on the finger. There is, of course, no danger from the thoroughly cooked meat.

The incubation period of the disease is generally from two to five days.

Symptoms

The onset is sudden and is manifested by chills, bodily pains, vomiting, prostration and fever. There is usually pain in the lymph glands, which drain the site of infection. In about half the cases the lymph glands proceed to suppuration. Later at the site of infection a swollen, inflamed papule develops which eventually ulcerates. The fever generally lasts from two to three weeks and may reach a maximum of 104°, or 105° F.

The temperature curve is very irregular suggesting septicemia. However, the symptoms sometimes resemble typhoid fever, especially in cases contracted by laboratory workers. In these cases there is no evident site of infection, or enlargement of the lymph glands. One attack apparently confers a life long immunity.

Treatment and Prevention

The treatment is symptomatic. Rest in bed is most important. Those who have had most experience with the enlarged glands do not advise excision or even incision until a very evident soft, thin place appears in the skin overlying the glands. No preventive vaccine or curative serum has been perfected. *The use of rubber gloves while dressing rabbits is advised, so as to avoid getting the infection.*

Cause and Transmission

The organism causing the disease is *Bacterium tularense* The organism usually gets into the body through a small break in the skin. It may be spread also by blood sucking insects such as the wood tick, or deer fly (Utah). Infection may occur through the conjunctiva. The infection apparently does not spread from man to man.

Laboratory Diagnosis

Agglutination: The blood serum of a patient suffering from tularaemia agglutinates Bacterium tularense, just as the serum of a typhoid patient agglutinates Bacillus typhosus; this is a very reliable and practical test.

Agglutinins are absent from the blood during the first week of illness, but blood taken in the second week has always reacted positively. The agglutinin titer reaches its maximum at the end of the fourth to seventh week when a decline in titer begins.

Serum is collected under ordinary sterile conditions as for the Wassermann test.

Blood may be sent for diagnosis to the State Laboratories in Richmond, Norton, and Harrisonburg, or the Hygienic Laboratory, Washington, D. C. Be sure to note the examination desired.

Animal inoculation with material from the patient will not be undertaken as it is unnecessary and fraught with considerable danger to the laboratory worker.

More detailed information on the subject of Tularaemia will be found in an article by Dr. Edward Francis in *The Journal of the American Medical Association*, *April* 25, 1925, Vol. 84, page 1243.

AUBREY H. STRAUS,
Director, Laboratories State Board of Health, and Richmond Health Bureau.

Analyses, Selections, Etc.

Irradiation of Diseased Tonsils.

In an article on this subject, J. Coleman Scal, of New York, describes a new method of treating tonsillar hypertrophies by means of Removable Platinum Radon Seeds, giving detailed reports of a series of cases where tonsillectomy was for different reasons contraindicated, and illustrating the application of the technique to varying pathological conditions.

To carry out the application of the seeds, a new implanter is used which is illustrated and described in the article.

As the pain of implantation and removal is practically *nil*, at no time is any anesthetic required, there is no need of hospitalization, nor disability of any kind. The total absence of shock is a great advantage in inoperable cases.

By means of the implanter the operator is able to place one Removable Radon seed in the center of a tonsil so that radiation is distributed equally throughout. The Radon seed used is filtered by 0.3 mm. of platinum. This filtration cuts off the caustic Beta rays thus doing away with all possibility of burning with consequent necrosis and sloughing.

When the instrument is withdrawn after implantation the seed is left imbedded in the tonsil with a 2 cm. length of thread protruding from the portal of entry. This short thread does not in any way inconvenience the patient, nor cause the slightest interference with function. At the end of four days the seeds are easily removed by grasping the thread with forceps.

The point of the trocar is so fine and the seed so small that very little trauma is done to the tonsil.

The amount of radiation can be measured with accuracy and the applicators located with such exactness as to insure equal and complete distribution throughout the tissues. Only one treatment is necessary, a fact much appreciated by the patient. Systemic reactions of any kind never occur. The attached thread, making the seed easily removable when its period of service is over, does away with an objectionable foreign body being left in the tissues—a drawback to the bare tube method. The author concludes that in the implantation of removable Platinum Radon seeds we have at present an adequate substitute for tonsillectomy in those cases where surgery is, for any reason, contraindicated.

The technic and method described in the article have been developed by Dr. Joseph Muir, of New York. (*Med. Jour. and Record*, 124:873, Dec. 1, 1926).

A Practical Treatment of Duodenal Ulcer.

W. C. Alvarez, of the Mayo Clinic, after referring to the matter of diagnosis of ulcer of the duodenum and the inadequate manner in which this subject is handled in the textbooks, proceeds to criticize the Sippy method of treatment on the ground that it is too elaborate and that the remissions under the Sippy method are no longer than after little or no treatment. In a word, the dietetic treatment recommended by the author consists in frequent feedings, that is, every two hours, selected from the author's "Smooth Diet" list, as given in a previous publication. This diet avoids all "scratchy" foods, such as raw fruits, salads, nuts, etc. Meat is allowed. The author rarely uses alkalies, depending almost solely on his schedule of two hour feedings, shortening this time to one and a quarter hours when the ulcer pains recur more frequently. The amount of exercise must be limited, particularly such exercises as pull on the duodenum, and the treatment persisted in for a long time. The author seems to be uncertain as to whether duodenal ulcer is ever cured by medicinal means.

As to surgical treatment, he has the following to say: "Patients with duodenal ulcer causing marked obstruction at the pylorus should generally be operated on as soon as they have been prepared by having the stomach washed and the body fluids restored. When there is considerable scarring and mechanical closure of the pylorus, it is foolish even to attempt medical treatment, and not infrequently all that the physician accomplishes by it is the loss of his patient's respect. Furthermore, it is in such cases that surgical treatment produces its most gratifying results. The surgeons had better be called in if the patient has a number of fairly thorough and more or less successful medical treatments, and especially if the ulcer is becoming chronic and unresponsive to dietetic management. He should be called, also, if there is a strong suspicion that there are complications such as cholecystitis, appendicitis, or perforation into neighboring tissues, or if the ulcer has shown a tendency to bleed severely." (*Jour. A. M. A.*, *Vol.* 87, *No.* 25, *Dec.* 18, 1926).

W. A. S.

The Symptomatology of Infection With Endameba Histolytica in Carriers.

Lt. Col. Charles F. Craig, of the Medical Corps of the U. S. Army, has made observations which show that a large proportion, more than 50 per cent, of so-called carriers of Endameba Histolytica present definite symptoms, apparently due to the presence of these microorganisms, and are therefore not to be properly classified as carriers.

Full appreciation of the prevalence of Endameba Histolytica infection has come only since the World War and it has therefore only lately been shown that these parasites are to be found in almost all localities and that carriers are relatively numerous, constituting in the United States about 10 per cent of the population.

Craig thinks the designation "Amebeic Dysentery" ill-chosen, since only the severe cases show this symptom. In the milder cases, the symptoms are generally attributed to some other cause and not recognized as due to infection from Endameba Histolytica. Hence, the average physician, not realizing the widespread extent of the infection in this country, fails to discover the true etiological factor.

Craig emphasizes the point that the symptoms are mild and are apt to be overlooked. Most commonly they are associated with the digestive or nervous systems. A condition of constipation, alternating with mild attacks of diarrhea, is perhaps the most common; such attacks of diarrhea are accompanied by a feeling of distention, and colicky pains, and are apt to occur late in the day or at night. Usually, only one or two diarrheal stools are passed but a slight diarrhea may persist for a day or two longer. Such attacks are infrequent and usually attributed to some indiscretion in diet. Craig details these additional symptoms:

Lack of appetite even to the point of anorexia; nausea; loss of weight, more pronounced in hot than in cold weather; evanescent neuralgic pains in lower abdomen, especially in right iliac region and over descending colon; dull aching in lower abdomen; flatulence and distention; tenderness over the liver, leading at times to diagnosis of cholecystitis or hepatitis; mild degree of anemia (no reference to eosinophilia).

Symptoms referable to nervous system of neurasthenic type—slight headache, neuralgic pains, dullness and lack of interest in daily work, poor memory, nervous irritability, sleepiness and disturbed sleep, irritable pulse, excessive perspiration of the palms of the hands and soles of the feet. Subnormal temperature, especially in the early morning hours, with sometimes a slight rise late in the day.

All of these indicate toxic absorption from the intestinal tract due to lesions produced by the parasites, permitting in addition the absorption of bacteria. Ulceration may occur without dysenteric symptoms (Musgrave 1910). (*Jour. A. M. A.*, *Vol.* 88, *No.* 1, *Jan.* 1, 1927).

W. A. S.

In Which Class Do You Belong?

Few persons enjoy really perfect health, declares Dr. William Everett Musgrave in *Hygeia* for February. For many generations physicians have divided people into groups according to their state of health. Some of these, based on current conditions and knowledge, follow:

1. *Healthy persons.* These are persons who have no discoverable defects; they constitute the smallest group.

2. *Persons who think themselves healthy but nevertheless have significant impairments.* This large group is most in need of examination and treatment and will benefit most from competent health service.

3. *Well and near-well persons who believe themselves more or less sick.* This group, including neurasthenics, hypochondriacs and faddists, are prominent supporters of fakers and are in the vanguard of emotional health innovations of all kinds.

4. *Ill persons who refuse to acknowledge the fact.* Some of these people are more dangerous to society than a cook with leprosy.

5. *Well and near-well persons who pay attention to their health only when overtaken by symptoms they cannot ignore.* This group is decreasing in size.

6. *Persons with obstinate or chronic complaints who are inexperienced, careless, easily discouraged or unfortunate in being badly advised.* They lose the advantage of early treatment by wasting time on nostrums.

7. *The sick.* These persons are sick and realize it from their symptoms.

Report on the Sale of Ultraviolet Generators Directly to the Public.

The Council on Physical Therapy of the American Medical Association, on the basis of the present available evidence, is convinced that the sale of generators of ultraviolet energy to the public for self-treatment is without justification. The Council bases its condemnation of the sale of such apparatus for this purpose on the following grounds:

1. The uninformed public could not take the proper precautions in administering treatments and, as a result, severe general burns or grave injury to the eyes might ensue.

2. Those not familiar with the possibilities of such apparatus would be led to place unwarranted confidence in the therapeutic value of such treatment by the claims that might be made in the literature advertising such generators, and to undertake to treat serious conditions not amenable to such treatment.

3. The unrestricted possession of such therapeutic means would tend to deprive people of expert diagnosis by encouraging them to make self-diagnoses.

4. Such practice would encourage the sale of useless and fraudulent lamps which would be advertised as generators of ultraviolet rays, since the public would have no means at its disposal to determine the quality or quantity of the radiant energy emitted by such lamps.

For the foreging reasons, the Council on Physical Therapy considers as detrimental to public welfare the sale or the advertising for sale, directly to the public, of a generator of ultraviolet energy. Under rule 11 of its Official Rules, the Council will declare inadmissible for inclusion in its list of accepted devices for physical therapy apparatus manufactured by a firm whose policy is in this matter detrimental to public welfare. (*J. A. M. A.*, January 22, 1927, Vol. 88, p. 245.)

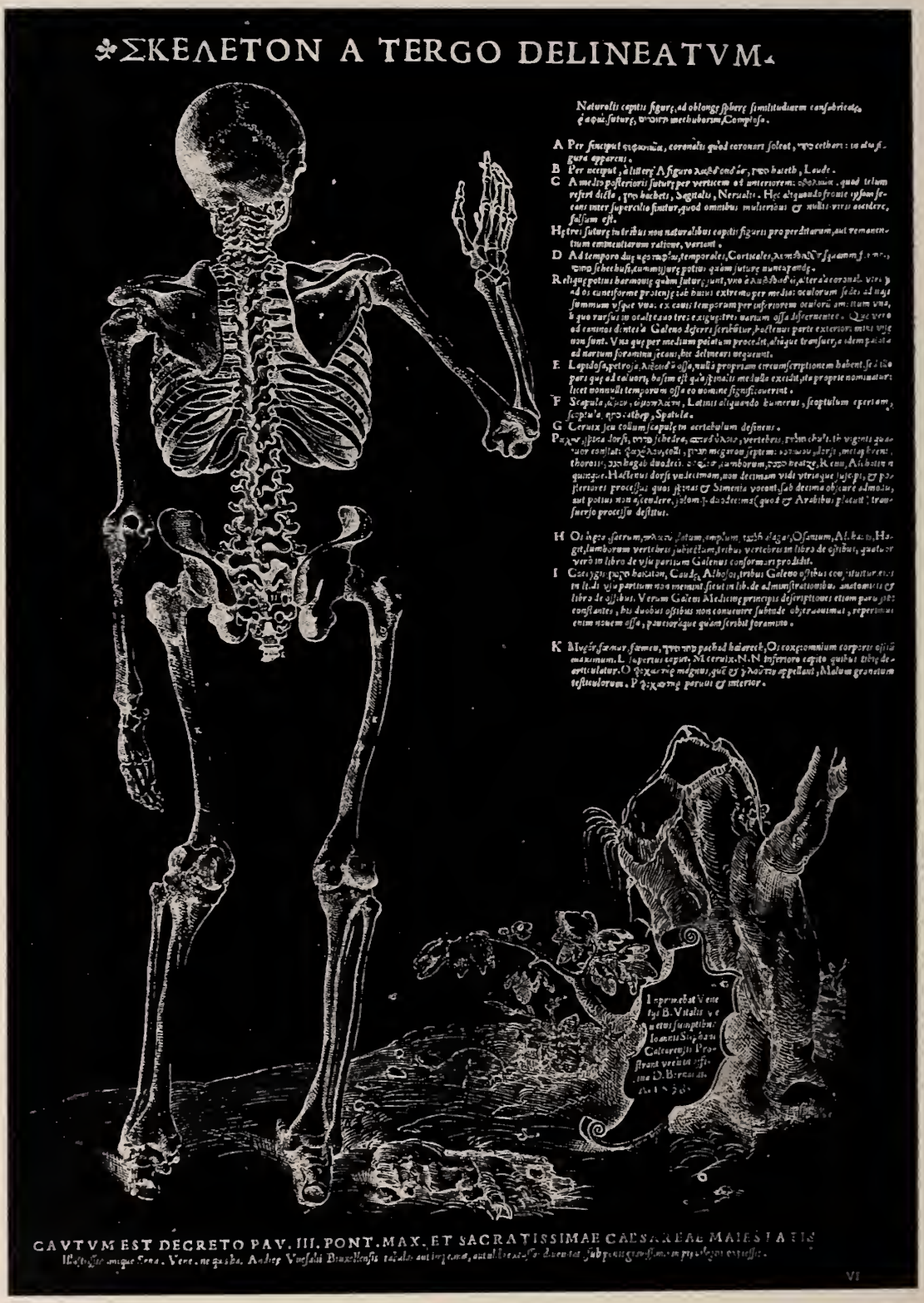
Bibliotheca Obstetrica

Vesalius.

"Vesalius (Andreas) [1514-64] Tabulae anatomicae sex [six anatomical tables of Andreas Vesalius] *Venetiis, sumptibus Joannis Stephani Calcarensis*, 1538, 61, 6pl. and title-page, eleph. fol. *London, privately printed for Sir William Stirling-Maxwell*, 1874.

Of this reprint only thirty copies were printed on paper, one on vellum and one on parchment. Of the original work only two copies are said to be in existence." (Index Catalogue of the Library of the Surgeon General's Office, second series).

A picture of Sir William Osler examining one of the original copies of this very rare work is shown in Cushing's "Life of Sir William Osler" (II:186) and a footnote tells that the Oxford Press was considering reprinting these tables in connection with the quarter century of Vesalius' birth that was to have been celebrated in Brussels, December, 1914. Professors Karl Sudhoff and Moriz Holl have since undertaken this project. That six anatomical plates should cause so great a commotion in the world of books is surprising until one considers what these plates stand for. The beautiful drawings of Leonardo de Vinci made for Vesalius' predecessor at Padua lay unnoticed in the Royal Windsor Library for more than a hundred years. The Tabulae Sex were the first fruits of Vesalius' revolutionary work which culminated in the publication of the great "De Corporis Humani Fabrica" of 1543 and 1555, a work that upset entirely traditional medicine and re-established the art of accurate observation. Vesalius' work is fundamental in modern medicine; so fundamental in fact that he has been claimed by various branches of medical learning. He is justly called the Father of Anatomy. Sir Michael Foster classifies him among the early physiologists, and James Gregory Munford treats of his life and work in the first chapter of "Keen's Surgery." His work belongs on the



Posterior view of skeleton from the Sir Stirling-Maxwell edition of the "Tabulae Anatomicae Sex" in the Library of the Surgeon-General's Office, Washington, D. C.

shelves of the Bibliotheca Obstetrica because he has given us the first correct picture of the pelvis, and without such knowledge there can be no obstretrics.

The fifty years of Vesalius' life were indeed varied ones. He was born in Brussels of a medical family, and had a passion for dissecting, even when a boy. He studied at the Universities of Louvain and Paris, taught at Louvain until he was banished for having in his possession the skeleton of a noted criminal who had been executed just outside of the city. He served as a surgeon in the Army of Charles V. for a short time, but gave it up and went to Italy where he did his great work. He was granted the M. D. of Padua in 1537 and soon afterwards, when but 22 years of age, was given the Chair of Surgery and Anatomy in that University. In the next five years he did a tremendous amount of work and at one time held the Chairs of Anatomy in the three Universities, Padua, Pisa and Bologna. With the publication of his work his troubles began. Mental inertia is ponderous and can not be upset with impunity. He struggled bravely for a time against the opposition to his views but finally in a rage he burned his manuscripts and accepted a position as physician to Emperor Charles V. His life at the Court in Madrid was a strange contrast to his busy productive life in Italy, but seems to have satisfied him completely until after nearly twenty years, the publication of Fallopius, his succesor at Padua, fell into his hands. This awakened a restless spirit within him, and shortly afterward we find him undertaking a pilgrimage to Jerusalem. Various reasons have been ascribed for this journey, but at any rate he visited the scenes of his early labors, went to Jerusalem and was returning to Italy when death overtook him on the island of Zante. There he lay buried in an unmarked grave for more than 300 years.

M. P. R.

Correspondence

Open Letter to the Profession.

Richmond, Va.,
January 14, 1927.

To the Editor:

The following letter has just been received by us:

"*January* 11, 1927.

State Board of Health,
Richmond, Virginia.

Dear Sirs:

I would like to know what a doctor's duty towards his patients is. I had a breakdown with tuberculosis on the ——— and Dr. ——— was attending me before that time and would not tell me about it before I broke down. Now he tells other people that he had been knowing it for two years but would not tell me, so I could take care of myself or protect my wife and child.

I was at ——— Sanatorium for several months and now I am back home but stay in bed.

I would be glad to hear from the State Board in regard to this. I do think it is a doctor's duty to let his patients know about a thing of this kind so they can take care of themselves the best they can. He has been the cause of me having a lot of expense and his bill, too, I do not think is just. If he had told me in time, I think I would have been up by this time and I don't think I would have broken down. Hoping to get an answer in regard to this, I am"

Certain marks of identification are eliminated for obvious reasons. The reasons for our requesting you to print this are also obvious.

Ennion G. Williams,
State Health Commissioner.

Last Illness and Death of Washington.

January 30, 1927.

To the Editor:

In reading the very interesting and comprehensive article by Dr. Walter A. Wells, of Washington, D. C., which appears in the January number, entitled "Last Illness and Death of Washington", I beg to call Dr. Wells' attention to a slight error in regard to the name of Washington's wife.

He writes—"It was at this time, when on his way to Williamsburg to consult the best physicians there, that he met the widow, Martha Ball. The medical treatment was evidently successful, for despite the pessimistic foreboding to which he had given utterance, within one month he was engaged, and within one year happily married."

George Washington's mother was Mary Ball. The widow he met and married was

Martha, the daughter of Colonel John Dandridge, and widow of Daniel Parke Custis.

AARON JEFFERY.

Newport News, Va.

(*Editor's Note.*—These genealogical errors were noted in the article following its publication and were corrected in the re-production of the article. We are very grateful to Dr. Jeffery for his letter.)

Proceedings of Societies

The Albemarle County Medical Society

Has elected Dr. I. A. Bigger, University, president for the ensuing year, and Dr. H. L. Baptist, Ivy Depot, vice-president. Dr. F. C. McCue, Charlottesville, was re-elected secretary-treasurer.

Nansemond County Medical Society.

At the regular meeting of this Society on January 11th, Dr. William T. Gay, Suffolk, was elected president, Dr. G. Richardson Joyner, Suffolk, vice-president, and Dr. C. F. Moriarty was re-elected secretary-treasurer. The secretary reports that the Nansemond Society is in a flourishing condition and he feels sure that the coming year will be more productive than the last.

Dinwiddie County Medical Society.

The annual meeting of this Society was held at the Country Club of Petersburg, Va., on December 16, 1926, this being a joint meeting with the Petersburg Medical Faculty.

The following officers were elected for the ensuing year: Dr. E. W. Young, of Petersburg, president; Dr. D. C. Mayes, Church Road, vice-president; and Dr. W. C. Powell, Petersburg, (re-elected) secretary-treasurer.

Dr. J. Shelton Horsley, of Richmond, President of the Medical Society of Virginia, by invitation read a paper on "The Relation of the Medical Profession to the Public, and to the State Society." Following this a fine dinner was served, which was much enjoyed by those present.

Pittsylvania-Danville Medical Society.

Last summer it was found that the Danville Academy of Medicine was operating without a charter from the State Society. As there was no society for doctors residing in Pittsylvania County, outside of Danville, it was decided to organize all doctors of the county into one society. This was done in the early fall, but the first regular meeting was not held until December 14th. Dr. Charles A. Easley, of Chatham, was elected president, Dr. L. E. Fuller, of Axton, vice-president, and Dr. John A. Hawkins, of Danville, secretary-treasurer. It was decided to hold meetings on the second Tuesdays in March, June, September and December, the place of meeting to be decided upon at each meeting. The March meeting will be held at Danville.

The Warwick County Medical Society

Has elected its officers for 1927 as follows: President, Dr. J. E. Marable; vice-president, Dr. W. W. Falkener; secretary-treasurer, Dr. Waverly R. Payne; insurance trustee, Dr. Clarence Porter Jones; censors, Drs. C. P. Jones, Wm. F. Cooper, Samuel Downing, O. T. Amory and H. G. Longaker. All officers are of Newport News. The secretary-treasurer reports that the Society is in better shape than for years, the financial status is good, the attendance has been unusually good for the past year, and the programs have been well above the average.

The Medical Examining Board of Virginia

Held its regular meeting and examinations in Richmond, December the 7th-10th, inclusive, at which time all twenty-eight applying were granted licenses to practice medicine in Virginia. Ten of these were from the University of Virginia, School of Medicine, the balance representing thirteen medical colleges. Names of those granted certificates are:

Dr. N. Floyd Adams, Jr., University, Va.
Dr. Walter H. Calhoun, III, Erica, Va.
Dr. Crosby W. Cartwright, Raleigh, N. C.
Dr. John J. Cullinan, Hampton, Va.
Dr. Nathaniel Dillard, Richmond, Va.
Dr. William LeRoy Dunn, Sanatorium, Va.
Dr. Oswald D. Durant, Charlottesville, Va.
Dr. Francis Patton Floyd, University, Va.
Dr. Michael Edward Gardner, Washington, D. C.
Dr. Andrew F. Giesen, Radford, Va.
Dr. Andrew M. Groseclose, Roanoke, Va.
Dr. Bradley D. Hodgkins, Alexandria, Va.
Dr. William Cary Holt, University, Va.
Dr. Holcombe Harris Hurt, Blackstone, Va.
Dr. Paul Todd Martin, Raphine, Va.
Dr. Frank M. McChesney, Washington, D. C.
Dr. Irvin S. Miller, Richmond, Va.

Dr. Ocie B. Morrison, Jr., Portsmouth, Va.
Dr. George Preston Nowlin, Lynchburg, Va.
Dr. Charles L. Outland, Richmond, Va.
Dr. Joseph K. Rowland, Richmond, Va.
Dr. Joseph R. Rucker, Bristol, Tenn.
Dr. Elmer Roberts Shepperd, Washington, D. C.
Dr. Roy W. Upchurch, Durham, N. C.
Dr. Henry VanMeier, University, Va.
Dr. Harry J. Warthen, Jr., Richmond, Va.
Dr. Frederick H. Wilke, New York, N. Y.
Dr. William Henry Welch, Washington, D. C.

Woman's Auxiliary Medical Society of Virginia

At the request of the officers of the Auxiliary, this space has been set aside for communications from them regarding matters of interest, both to the profession and to the women members of their families.

All communications should be addressed to Mrs. E. F. Truitt, Secretary, Westover Avenue, Norfolk, Virginia.

THE WOMAN'S AUXILIARY FROM THE NATIONAL STANDPOINT.

By MRS. JOHN O. McREYNOLDS, Dallas, Texas.
President-Elect of the Woman's Auxiliary to the American Medical Association.

There are many phases of our work that are tremendously important and should be profitably considered by each of the state and local Auxiliaries, but in this discussion I can refer to only two features that stand out with especial prominence at the very threshold of our national endeavors. One concerns our attitude in different kinds of political situations, and the other is our relation to the growing problem of Preventive Medicine, which is such an important factor in the medical profession of today.

With reference to the first, it is evident that utmost care and discretion should be exercised at all times, so that our organization, instituted for the purpose of promoting the spirit of fraternity and good-will and helpful influences, shall not become perverted into channels of political discord by injecting the poison of petty personal animosities into our cup of good deeds which we might otherwise carry to the people of our country with the endorsement and the benediction of the great profession of the healing art.

With nearly half of the United States already organized after only four years of existence, within a much shorter time the entire nation will have formed Auxiliaries and we will become a veritable army of conscientious physicians' wives, with a powerful influence, and this is just the reason why we should zealously guard against the injudicious use of this power. It would seem advisable to adopt a definite and well defined policy in this respect, which could be arrived at by a frank and free conference with the wise and experienced leaders of the Medical Profession.

It is most important that our Auxiliaries should exert their influence in matters involving principles, and not in personal preferences, and even in those cases in which certain fundamental principles are involved it would be judicious that each Local, or State, or National Auxiliary should take specific action only after being requested by a Committee from that medical organization of which that particular Auxiliary is a part. In this way County Auxiliaries would act in connection with County Medical Societies, State Auxiliaries in co-operation with State Medical Associations, and the National Auxiliary at the request of the American Medical Association. By this means all of our work would be what our name implies—Auxiliary, and organized reserve force, and could never become out of harmony with any part of the great Medical Profession the Auxiliaries were created to help, thereby leaving all political responsibility in the hands of the various medical organizations.

It seems to me our greatest work lies in the realm of promoting better social contacts in medical circles, in stimulating philanthropic impulses and endeavors for the welfare of our people, and in the education of the public in matters pertaining to health.

We are not a Club, but an organization, every one of us members of one or more Social, Literary or Civic Clubs—marvelous instruments through which we might broadcast our Gospel of Health, urging each Club in every State to provide at least one health program during the year and emphasizing, through this avenue, the importance of *annual physical examinations* on the *birthdays* of the members of their households.

We could soon build highways of Health and

Happiness all over our land, and this might inspire our people to build living monuments to the Soldiers of the Healing Art who have fought so valiantly to conquer our greatest enemy—Disease. These monuments need not be of marble, or granite or bronze, but made of the more enduring substance of gold in memorial foundations, giving forth day after day, year after year, throughout the coming ages, the same humane emanations and helpful influences that characterize our Great Physicians, our Illustrious Heroes who fight to Save Lives—not to Destroy Them.

The Woman's Auxiliary to the Richmond Academy of Medicine,

At its regular meeting in January, elected Mrs. Francis W. Upshur chairman for the ensuing year. Mrs. J. W. Hannabass was elected secretary-treasurer, Mrs. Stuart Michaux general social chairman, Mrs. T. N. Ennett vice-chairman of social activities, and Mrs. T. Latane Driscoll press agent.

The Truth About Medicine

In addition to the articles enumerated in our letter of November 27th, the following have been accepted:

Cutter Laboratory
- Diphtheria Toxin-Antitoxin Mixture 0.1 L^1.

Eli Lilly & Co.
- Cholera Vaccine, Prophylactic
- Plague Vaccine, Prophylactic
- Old Tuberculin Human Strain Concentrated, Pirquet Test
- Tuberculin Ointment for the Moro Percutaneous Test
- Tuberculin T. R. Concentrated Human Strain,
- Tuberculin B. E. Concentrated Human Strain,
- Tuberculin B. F. Concentrated Human Strain,
- Ampoules Glucose (Dextrose U. S. P.) Lilly 10 Gm., 20 c.c.
- Ampoules Glucose (Dextrose U. S. P.) Lilly 25 Gm., 50 c c.

H. A. Metz Laboratories, Inc.
- Gynergen
  - Ampules Gynregen, 1.1 c.c.
  - Tablets Gynergen, 0.001 Gm.

Parke, Davis & Co.
- Bismuth Salicylate in Oil—P. D. & Co.

Winthrop Chemical Co.
- Tutocain
  - Tablets Tutocain No. 1 (with epinephrin) 0.03 Gm.
  - Tablets Tutocain No. 2 (with epinephrin) 0.03 Gm.
  - Tablets Tutocain No. 3, 0.03 Gm.
  - Tablets Tutocain No. 4 (with epinephrin) 0.05 Gm.
  - Tablets Tutocain No. 5, 0.1 Gm.

NEW AND NON-OFFICIAL REMEDIES

Tetanus Antitoxin for Human Use (New and Non-official Remedies, 1926, p. 333).—This product is also marketed in packages of one syringe containing 10,000 units and in packages of one syringe containing 20,000 units. Cutter Laboratory, Berkeley, Calif. (Jour. A. M. A., Dec. 4, 1926, p. 1917).

Typhoid Prophylactic (New and Non-official Remedies, 1926, p. 359).—This typhoid vaccine is also marketed in packages of one syringe and in a 20 c.c. bottle. Cutter Laboratory, Berkeley, Calif.

Scarlet Fever Streptococcus Antitoxin Concentrated Globulin—P. D. & Co. (New and Non-official Remedies, 1926, p. 332).—The product is now prepared by the method of Drs. Dick. This product is also marketed in single 1 c.c. vial packages (for the diagnostic blanching test). Parke, Davis & Co., Detroit, Mich. (Jour. A. M. A., Dec. 11, 1926, p. 1999).

Homocamfin. — Cyclosal.—3-methyl-5-isopropyl-$\angle$2-cyclohexanone dissolved in an aqueous solution of sodium salicylate. Methylisopropylcyclohexanone, the potent constituent of homocamfin, is claimed to have an action similar to camphor, but to surpass it in intensity and rapidity of action on the heart and respiration. It acts almost instantly when given intravenously, hence caution must be used when it is administered in this way. Homocamfin is used as a stimulant in cardiac failure, surgical shock, narcotic poisoning and respiratory failure. The product is marketed in Ampules Homocamfin 10 per cent (for intramuscular use) and Ampules Homocamfin 1 per cent (for intravenous use). Winthrop Chemical Co., Inc., New York.

Tutocain. — Butamin. — p-amino-benzoyldimethylaminomethyl-butanol hydrochloride. Tutocain is a local anesthetic employed chiefly for surface anesthesia and by subcutaneous injection. In experiments made for the Council, Tutocain in 3 per cent solution is about four times as toxic as procaine hydrochloride by rapid intravenous injection into the cat and a fatality has been reported following the injection of 8 c.c. of a 2 per cent solution into the urethra. On the other hand, experiments and clinical trials have been reported in support of the claim that Tutocain is relatively safe for use in surface anesthesia and by hypodermic injection. Tutocain is marketed as: Tablets Tutocain No. 1 (with Epinephrin), containing 0.03 Gm,; Tablets Tutocain No. 2 (with Epinephrin) containing 0.03 Gm.; Tablets Tutocain No. 3, containing 0.03 Gm.; Tablets Tutocain No. 4 (with Epinephrin), containing 0.05 Gm.; Tablets Tutocain No. 5, containing 0.1 Gm. Winthrop Chemical Co., Inc., New York. (Jour. A. M. A., Dec. 18, 1926, p. 2093).

Diphtheria Toxin-Antitoxin Mixture 0.1 L^1.—Each c.c. of the Diphtheria Toxin-Antitoxin Mixture (New and Non-official Remedies, 1926, p. 333), represents 0.1 L^1 dose of diphtheria toxin neutralized with the required amount of antitoxin. The product is marketed in packages of three 1 c.c. vials for one immunization; in packages of thirty 1 c.c. vials for ten immunizations; in packages of one vial containing 50 c.c. Cutter Laboratory, Berkeley, Calif.

Pirquet Test.—Tuberculin—Koch. (New and Non-official Remedies, 1926, p. 344), marketed in packages of three capillary tubes. Eli Lilly & Co., Indianapolis.

Tuberculin Ointment for the Moro Percutaneous Test.—Tuberculin—Koch (New and Non-official Remedies, 1926, p. 344), marketed in the form of an ointment in tubes containing 2 Gm.

Old Tuberculin, Human Strain, Concentrated.—Tuberculin—Koch (New and Non-official Remedies, 1926, p. 344), marketed in 1 c.c. vials. Eli Lilly & Co., Indianapolis.

Tuberculin, T. R. Concentrated, Human Strain.—

New Tuberculin T. R. (New and Non-official Remedies, 1926, p. 347), marketed in 1 c.c. vial packages. Eli Lilly & Co., Indianapolis.

Tuberculin, B. E. Concentrated, Human Strain.—New Tuberculin B. E. (New and Non-official Remedies, 1926, p. 347), marketed in 1 c.c. vials. Eli Lilly & Co., Indianapolis.

Tuberculin, B. F. Concentrated, Human Strain. Tuberculin Denys (New and Non-official Remedies, 1926, p. 349), marketed in 1 c.c. vials. Eli Lilly & Co., Indianapolis.

Plague Vaccine, Prophylactic.—Plague bacillus vaccine (New and Non-official Remedies, 1926, p. 354), marketed (for single vaccinations), in packages of two 1 c c. vials; in packages of ten 1.5 c.c. vials; in packages (for double vaccinations) of one 20 c.c. vial; in packages of three 1 c.c. vials. Eli Lilly & Co., Indianapolis.

Cholera Vaccine, Prophylactic.—Cholera vaccine (New and Non-official Remedies, 1926, p. 351), marketed in packages of three 1 c.c. vials; in packages of ten 2.5 c.c. vials. Eli Lilly & Co., Indianapolis. (Jour. A. M. A., Dec. 25, 1926, p. 2163).

PROPAGANDA FOR REFORM

Oleosolution Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that Oleosolution, according to the Nizza Laboratories, Inc., Chicago, is a "New therapeutic agent," which is "Made in France by a Special Process of J. Truc" and which is "Used with Great Success as Basic Treatment in cases of Tuberculosis—Chronic Bronchitis—Grippe—Pneumonia—Asthma." It is to be administered orally, by intratracheal injection, by rectum and applied externally. The following complex, indefinite and essentially meaningless "formula" is furnished: "Vegetable Essences: Thymus Vulgaris, Thymus Serpyllum, @ @ 50 gr.—Eucalyptus Globulus, Malaleuca Leucadendron, Salvia Sclarea—@ @ 100 gr.; Vegetable Organic Mineral Salts: Smilax Officinalis, Quercus Robur, Urtica Urens, Glecoma-Hederacea, Abies Pectinata, Fucus Vesiculosus,—@ @ 200 Gr.; Vegetable Chlorophylls, Waxes, Ferments, Vitamines: Caulis, Apium Petroselinum, Racomus Cerosus, Pomum,—@ @ 150 gr.; Oleum Olivarum, 10,000 gr." The Council found Oleosolution unacceptable for New and Non-official Remedies because it is an indefinite, semisecret and needlessly complex mixture which is marketed with exaggerated and unwarranted therapeutic claims and in a way to lead to its ill-advised use by the public. (Jour. A. M. A., Dec. 4, 1926, p. 1933).

Enterocap Oralsulin.—This is advertised by the Lafayette Pharmacal Co. as "a product of the Pancreas of young food animals that is designed for use as an adjunctive treatment of Diabetes Mellitus." From this and other statements it appears that it is claimed to be a preparation containing insulin put up in enteric coated capsules for oral administration. Even if one could be sure that the insulin said to be present would arrive in the intestine unharmed, the weight of evidence is against its probable effectiveness. There is no convincing evidence to show that any preparation taken by mouth is an effective means of producing the characteristic action of insulin. (Jour. A. M. A., Dec. 4, 1926, p. 1935).

Physical Therapy.—The Council on Physical Therapy of the American Medical Association is now ready to consider devices for physical therapy. The consideration of apparatus will be governed by official rules, designed to protect the medical profession and the public against fraud, undesirable secrecy and objectionable advertising in connection with apparatus and methods for physical therapy. Devices and methods that have been found acceptable as conforming to the rules will be described in an Accepted List. (Jour. A. M. A., Dec. 11, 1926, p. 1999).

Therapeutics—Anno Domini 1926.—A few pseudo-medical journals still eke out a precarious living by selling their advertising pages to nostrum exploiters who cannot obtain space in reputable medical journals. One of these survivals is the *Archives of Therapeutics*, published by the Archives of Therapeutics, Inc., 243 Fourth Ave., New York City, which gives on its title page the names of Carl P. Sherwin, M. D., Sc. D., LL. D., as editor; Benjamin Harrow, Ph. D., as managing editor, and of fifteen associate editors, some of whom are men of unquestioned professional standing. In the November, 1926, issue, are thirteen and three-quarters pages of advertisements of nostrums, the great majority of which are not only unacceptable for "New and Non-official Remedies," but have also been at one time or another the subject of critical reports. Some of these are: Abican, Agarol, Anasarcin, Antiphlogistine, Campho-Phenique, Cactina Pillets, Chionia, Echthol, Gray's Glycerin Tonic, Hexalet, Hyperol, Pasadyne, Phillips' Phospho-Muriate of Quinine, Peacock's Bromides, Pineoleum, Prunoids, Sal Hepatica, Sanmetto. In addition to this list there is a full-page advertisement of "Orchaphrin Tablets" and "Ovaphrin Tablets," described as aphrodisiacs for men and women respectively. They are said to be mixtures of yohimbine hydrochloride, extract of nux vomica, sodium nucleinate, pituitary, thyroid and suprarenal substances, and to differ only in that the "Aphrodisiac for Men" contains, in addition to the products listed, orchic substance, while the "Aphrodisiac for Women" has ovarian substance.

This number also contains a "Ready Reference Index," listing 120 pathologic states and giving 300 recommendations of proprietary remedies for their treatment. (Jour. A. M. A., Dec. 11, 1926, p. 2017).

Cod Liver Oil Extracts.—The available evidence points against the efficiency of the products that have been included in the cod liver oil extract category. Vitamins A and D, in which cod liver oil abounds, tend to dissolve with readiness in fats or fat solvents. The so-called extracts are usually at best weak alcoholic fluids of very doubtful solvent power so far as the vitamins referred to are concerned. The malt extracts that may be incorporated with the proprietary mixtures may have potencies that cannot, however, be identified with the specific characteristics of the cod liver oil. Recently, vitamin concentrates have been prepared from cod liver oil by saponification of the latter, the potent substances being contained in the nonsaponifiable fractions. Such a cod liver oil concentrate has been accepted by the Council on Pharmacy and Chemistry. (Jour. A. M. A., Dec. 11, 1926, p. 2019).

Phosphorus in Rickets.—The reports in regard to the efficacy of elementary phosphorus in rickets are surprisingly contradictory. Experiments have been carried out, however, which show that elementary phosphorus has no significant healing potency in rickets. (Jour. A. M. A., Dec. 18, 1926, p. 2094).

Clearwater's Rheumatic Treatment.—In the village of Hallowell, Maine, there has been conducted for some years a piece of mail-order quackery by one H. P. Clearwater, a man without medical training. Clearwater has a somewhat extensive line of nostrums, some of which are sold exclusively on the mail-order plan, while in the sale of others, Clearwater splits profits with drug stores. Clearwater's mail-order activities are mainly with his alleged

cure for rheumatism, "Clearwater's Scientific Rheumatic Treatment." From an analysis made in the A. M. A. Chemical Laboratory it appears that the "treatment" consists of two kinds of laxative tablets, one of which has in addition sodium iodide ⅓ grain and sodium carbonate 5 grains per tablet. (Jour. A. M. A., Dec. 18, 1926, p. 2112).

Bar-Che-Co.—The price list of Barksdale Chemical Co., successors to the Webster-Warnock Chemical Co., Memphis, Tenn., presents the usual pills, elixirs, tinctures, etc., and the inevitable assortment of irrational shotgun "specialties." A booklet and form letter feature "Bar-Che-Co.," "the mighty aphrodisiac," recommended for "its therapeutical value in the treatment of Neurasthenic impotence." The preparation is claimed to contain "Yohombine (Yohimbine?) hydrochloride," 1-12 Gr.; "Extract Nux Vomica," 1-6 Gr.; "Lecithin," 1-8 Gr.; "Pituitary Substance," 1-24 Gr.; "Thyroid Substance," 1-12 Gr.; "Suprerenal (Suprarenal?) Substance," 1-5 Gr. This is a typical shotgun mixture, and is open to all the objections that have been made to this discredited style of therapy. (Jour. A. M. A., Dec. 18, 1926, p. 2114).

Thyroid in Obesity.—Reduction of weight should not be undertaken by means of thyroid alone. Dietary procedures form the basis of all scientific and rational reduction methods. In some instances, when diet will not suffice, thyroid may be used. When describing the drug physicians should make certain that they will be supplied with the U. S. P. product and small doses should be given at the beginning, watching the pulse and nervous system. Thyroid is always a double edged sword and must be used with caution. (Jour. A. M. A., Dec. 18, 1926, p. 2114).

"Narcosan" and Drug Addiction.—Newspapers have carried a story concerning the discovery by "Dr." A. S. Horovitz, of a new remedy for drug addiction known as "narcosan." Since 1913, Horovitz has been identified with attempts to promulgate cures for all sorts of disorders by mixtures of lipoids and vegetable substances of the nature of nonspecific proteins. Included in his records are the Horovitz-Beebe "cure" for cancer, the Merrell Proteogens for the cure of practically everything and more recently "narcosan," originally brought out about 1920 under the name of "Lipoidal Substances." Horovitz' present effort to promote "narcosan" as a cure for narcotic addiction, is supported by an investigation by Dr. Alexander Lambert, ex-president of the American Medical Association and Frederick Tilney, one of the editors of the Archives of Neurology and Psychiatry. The paper appeared in the New York Medical Journal and Record. It was rejected by the Journal of the American Medical Association because the Council on Pharmacy and Chemistry rejected the product known as "Lipoidal Substances" in 1921, because up to the present time the product has not been resubmitted, and is apparently still of unestablished composition, and because the clinical investigations are not set forth in such a manner as to indicate even ordinary controls. (Jour. A. M. A., Dec. 18, 1926, p. 2097).

Organotones.—"Organ-O-Tones No. 19" is one of a series of "shotgun" pluriglandular mixtures marketed by the Cole Chemical Co. and "pushed" vigorously as an "obesity" remedy, largely by means of postcards, which tell nothing of the ingredients of the preparation. The product is said to contain: "Thyroid substance," ½ Gr.; "Pituitary (whole)" ¼ Gr.; "Phytolaccin," ½ Gr.; "Apocynum (P. E.)," ¼ Gr.; "Organ-O-Tones No. 12," (containing "Sodium Bicarbonate," "Potassium Bicarbonate," "Calcium Glycero-Phos," "Calcium Phos. (dibasic)," "Magnesium Phosphate,") 3½ Gr. The complexity of the formula is exceeded only by the obviousness of the conclusion that the "Thyroid substance" is the ingredient intended to do the business. Organ-O-Tones No. 19 is, in effect, just another of the dangerous thyroid "anti-fat" nostrums to which attention has recently been directed. (Jour. A. M. A., Dec. 25, 1926, p. 2179).

Malt-Nutrine Not Acceptable for N. N. R.—The Council on Pharmacy and Chemistry reports that Malt-Nutrine (Anheuser-Busch, Inc., St. Louis), is said to represent: "The Body-Building Strength of Choicest Hops and Malt Stored up in this unadulterated, uncolored, almost predigested LIQUID-FOOD-TONIC." The product is stated to contain Alcohol, 3 Gm., and "Hop extractives" 0.20 Gm. The product is stated to be "a nutritive tonic" and "not a beverage" and to be indicated in the treatment "of nursing mothers, anemic men and women, convalescents from wasting diseases and the overworked and undernourished." Since Malt-Nutrine is to be used as a medicine and not as a beverage, it becomes subject to consideration by the Council on Pharmacy and Chemistry. The Council held that it is unacceptable for New and Non-official Remedies because (1) the therapeutic claims made for it are unwarranted and (2) the name is therapeutically suggestive. (Jour. A. M. A., Dec. 25, 1926, p. 2177).

Book Announcements

The Practice of Medicine. By A. A. STEVENS, M. D., Professor of Applied Therapeutics in the University of Pennsylvania, etc. Second edition, entirely reset. Philadelphia and London. W. B. Saunders Company. 1926. Octavo of 1,174 pages. Cloth. Price, $7.50 net.

As a classic in American Medical Literature, Osler is pre-eminent. But the great majority of doctors wanting a very present help in time of need will find in Stevens' Practice all that is new and true of one of the best teachers of the day. Many new things are found in the second edition just published.

The book has had a very thorough revision. The author's aim has been "to present descriptions of the various internal diseases which should accord with the present state of our knowledge, and, which, though concise, should give * * * the most necessary points in pathology, diagnosis and treatment." By this means he has managed to omit much of the irrelevant material that has filled up many of the books of the past. By the omission of case histories and with but few illustrations, Dr. Stevens has made a book of moderate size while the publishers have done the unusual thing of keeping the price within reason. This is undoubtedly the most practical modern text-book on the market and should be in the library of every practitioner.

H.

Virginia Medical Monthly

FOUNDED BY LANDON B. EDWARDS, M. D., APRIL, 1874.
OWNED BY THE MEDICAL SOCIETY OF VIRGINIA.
PUBLISHED BY THE PUBLISHING COMMITTEE.

A. G. BROWN, Jr., M. D., Chairman, Richmond, Va.
B. R. TUCKER, M. D., Richmond, Va.
P. W. HOWLE, M. D., Richmond, Va.
E. L. KENDIG, M. D. Victoria, Va.
A. L. GRAY, M. D., Richmond, Va.

ALEX. G. BROWN, Jr., M. D.,
Editor.

AGNES V. EDWARDS,
Business Manager and Secretary-Treasurer.

All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $2.00 per annum in advance.
Single Copies 20c.

VOL. 53. FEBRUARY, 1927 No 11

Editorial

The Michigan State Medical Journal and the "Washington Article".

It was with great pleasure that we consented to a request from the Editor for permission to use the leading article of our January issue, entitled, "Last Illness and Death of Washington", in the February number of the *Michigan State Medical Journal.* Dr. Wells, the author, also gave his consent. The article will appear produced in full. The plates were mailed promptly in order that they might be included in the reproduction. It is a pleasant thought to know that the Michigan profession will thus share with Virginia doctors an article which must stir the scientific and historic interest of every American, as he peruses the story of the final illness and medical treatment of America's foremost statesman and historic figure, who was "first in war, first in peace, and first in the hearts of his countrymen."

Medical history of this country abounds in rich material. It only needs that investigators and qualified writers shall address themselves to the task. Dr. Wells deserves our thanks for his efforts in presenting the paper of General Washington's final illness and we hope our Michigan fellow practitioners will find interest in its perusal.

The only word of caution, in speaking of reading of medical history, that needs to be uttered is one of moderation. For one must be on one's guard, when once under the spell of the fascination of delving into historic events and personalities of medicine, not to permit an over-indulgence of this interesting sort of reading. One may be led off easily too far on extensive excursions into the paths of ancient medicine and in this way fail to give a proper place, in the daily routine of reading, for thoughtful study and consideration of present day epoch making publications of modern medical progress.

Juvenile Diabetes and Joslin.*

The accepted high mortality of diabetes in children before insulin makes a consideration of recently presented end-results of impressive significance. Any fair consideration of the subject is worthy of comment, but a presentation of the result of the treatment of 395 diabetic children by Joslin, of Boston, properly assumes a high degree of significance. Any Joslin statement on diabetes is notable. No one speaks with more authority; no one ever speaks with more fairness; few speak with clearer or more accurate diction. In diabetes, no greater experience has been attained than Joslin's. For years, to be able to say that of 395 diabetic children two hundred are alive today is to set for Joslin a place apart in diabetic history.

Probably no living man can record a like inclusive clinical experience in diabetes. Joslin's phrases are always clear, telling and forceful and in no paragraph of his publications may one look for the real story of the great clinician himself better than in his comment on Juevenile Diabetes when he says: "This is the story of my diabetic children changed from gloom to justified hope by my friends, Naunyn, Allen, Banting and a host of others, all I think best described in the words of the psalmist as those 'who, passing through the valley of Baca, make it a well.'

Now note, if you please, the summary of his end-results, or present results, in twenty-eight years of clinical treatment of juvenile diabetes.

"1. More than half of 395 diabetic children treated since 1898 are known to be alive. The duration of eight cases, three dead and five living, have exceeded ten years. One child is living from the Naunyn epoch, fifty-two from the Allen epoch and 147 from the Banting epoch.

"2. The duration of the fifty-one fatal cases in the Naunyn epoch was 2.1 years, and of the thirty-four fatal cases thus far in the Banting epoch, 2.6 years.

"3. The duration of disease in fifty-two chil-

*Joslin, E. P., J. A. M. A., Jan. 1, 1927, page 28.

dren now living, first treated in the Allen epoch, is 6.6 years.

"4. The terms 'acutely fatal diabetes' and 'complete diabetes' were banished in the Allen period.

"5. Pathologic and clinical evidence justifies hope for the future of the diabetic child.

"6. The child with diabetes is the pure diabetic patient: he sets the standard for the rest and is the sentinel for the army of a million diabetic patients in this country.

"7. Diabetic children deserve the best protection which modern preventive medicine affords."

The Value of the Xanthine Diuretics in Congestive Heart Failure.

Marvin*, of New Haven, presents a well considered article with the foregoing title. This presentation of the subject brings forward a study of the effect of these diuretics in cardiac cases, especially after digitalis alone has failed. Caffeine being eliminated as practically useless, so far as its diuretic action on human beings is concerned, the term "xanthine diuretic" is used by the author to include theobromine and theophylline and their combinations such as theobromine sodio-salicylate (diuretin); and theocin, synthetic theophyllin, which Christian said: "is in the pharmacopeia but not in the pharmacy". However, recently it is obtainable, although in our hands it has failed to effect salutary results in a case of cardiac edema within the past few weeks.

Marvin studied a group of seventy-seven patients with advanced congestive heart failure. This group of patients was treated with digitalis, and diuretics of the xanthine group: theophyllin, theobromine, and theobromine sodio-salicylate. Thirty-six became edema-free after using digitalis alone. Of the remaining forty-one, thirteen were entirely relieved of edema by one or more of the diuretics employed, five others had well marked diuresis with loss of most of the edema and five more were moderately benefited.

Theobromine sodio-salicylate (diuretin) was least effective. Theobromine was more effective. Theophyllin was the most potent of these diuretics. Marvin points out that there seems to be a fair reason to think xanthine diuretics were more effective in arteriosclerotic hypertension heart disease than in rheumatic heart disease.

*J. A. M. A., Vol. 87, No. 25, Dec. 18, 1926, page 2039.

Diuretic Action of Ammonium Chloride and Novasurol in Case of Nephritic Edema.

Keith* and others, after stating the favorable use of calcium chloride and ammonium chloride in nephritic edema, consider the employment of the organic mercury compound, novasurol, in persistent edema cases due to nephritis. Twelve cases of edema of this sort were observed, the amount of edema varying from a moderate diffuse amount to a marked general anasarca. Duration of the edema extended from a period of ten days to two years. The types of nephritis were varied. In no case was there serious cardiac impairment. The renal function inquiry showed that there was a delayed excretion of water and chlorides, while the initial phenosulphonphthalein return varied from 35 to 75 per cent except in one case when it was 5 per cent.

The dietary management of nephritic edema was best influenced by a weighed low salt diet, one patient losing nearly twenty pounds on it. Ammonium chloride was used by mouth in eleven cases of nephritic edema. Decided decrease of alkali reserve of the blood plasma and an increased acidity of the urine was noted and caution in the use of ammonium chloride suggested on this account.

Novasurol was injected intramuscularly and intravenously in doses of from 0.5 to 2.5 c.c. and, as a rule, it produced diuresis. Novasurol seemed more effective in patients who had previously taken ammonium chloride and in whom the urine was decidedly acid. The authors conclude that, in most cases, with controlled diets, ammonium chloride and novasurol, beneficial results were immediately gotten by diuresis; it seemed to be due to a combined effect because each agent, used alone, was ineffective in itself.

Ascites of Hepatic Disease Treated by Novasurol.

Rowntree† and others used a group of twenty cases, comprised of ten cases of portal cirrhosis and cardiac decompensation, two of syphilitic cirrhosis, two of Banti's disease, two of neoplastic disease with metastasis to the liver, one of polyserosis, and one of polycythemia with chronic endocarditis and myocardial insufficiency. Ascites was marked in all; in many it was a paramount symptom; the heart and kidney were apparently competent in all but three.

The authors used novasurol intramuscularly

*Collected papers of the Mayo Clinic, XVII, 1925, page 338.
†Collected Papers of the Mayo Clinic, XVII, 1925, page 233.

and intravenously in combination with the administration of ammonium chloride by mouth and a controlled diet, low water intake, and a low salt allowance. The results were favorable. Ascites, which resisted other measures promptly in many instances, yielded to this treatment.

Restriction of water (800 c.c. daily) was of undoubted value. The low salt allowance proved important here as in nephritic edema. But ammonia chloride seemed a favorable adjuvant, and a needed one, in securing from novasurol its full diuretic action. Although novasurol alone in these cases appears to be a potent diuretic and produced a loss of ascitic fluid; in three cases it failed to yield results, however.

Itching as a Symptom.

Probably no symptom perplexes the general practitioner more than the itching skin. The tantalizing nature of this skin symptom vexes the patient. Frequently the physician is provoked to indifference by the lack of familiarity with the deeper meaning of the itching symptoms; not possessing the acumen in such symptomatology, the general physician may be influenced to overlook a grave malady. The aggravation of itching skin deserves on the part of practitioners thoughtful investigation. Such consideration may lead, if other items of examination have not, to grave or important internal disease. With such thought in mind, one may comment with profit upon Goeckerman's paper in Collected Papers of the Mayo Clinic, xviii, 1925, 665.

Itch dermatosis, based upon toxic etiology, naturally claims first consideration. The itching skin usually is caused by disturbed metabolism with the absence of pigmentation, excoriation, lichenification, and pyogenic disease. Itching skin may usually be attributed to some underlying systemic disease which is producing toxic material itself or which is disturbing metabolic processes by causing undue retention of metabolites.

The following maladies may be looked for as provocative of itching skin:

1. Hyperthyroidism and hypothyroidism,
2. Focal infections,
3. Chronic nephritis,
4. Arteriosclerosis,
5. Diabetes mellitus,
6. Chronic intoxication from drugs, as opium, cocain, tea, coffee, etc.,
7. Functional or organic nervous diseases,
8. Chronic liver diseases, with or without jaundice,
9. Abdominal malignancy and lymphogenic diseases.

Of this list of systemic diseases, comment need hardly be made for emphasis' sake. Our author directs attention to the possibility of overlooking moderate hyperthyroidism, calling attention to the fact that the itching is usually on the upper back, extremities, genital, perineal or anal region. In the latter region, however, local causes should be suspected. The disturbance of the skin in chronic nephritis and diabetes further calls attention to the relationship between itch and internal disease.

Dermatoses with characteristic skin changes are noteworty in this connection as productive of itch skin. The following are included:

1. Granuloma fungoides. This is closely related to leukemia, although the exact relationship is not definitely known. Antipruritic therapy is useless, and this form of itch seems to yield best to radiotherapy and arsenic, and these should be instituted early in the stages of the skin pathology if good results are reasonably to be hoped for.

2. Dermatitis herpetiformis is not so definitely accepted. Some believe in the hematogenous origin while others believe in the nervous origin of the skin affection. The latter view is probably more generally accepted. The herpes of neuritis and "shingles" is thought to be of bacterial origin with a focal infection back of it.

3. Lichen planus is an enigma as yet. Whether it be a local or systemic disturbance is undecided. The author suggests a bacterial etiology as a possibility.

4. Eczematosed dermatitis is probably as much a symptom as itch is, but it is probable that the irritating factors lay back upon a toxic etiology.

The excess of purin-free bodies in the blood, the similarity of so-called exudative diathesis as hay fever, asthma, gout, angioneurotic edema, the deficiency of epinephrin content in the blood, are but a few of the suggested etiologic factors of eczema. Gastro-intestinal disturbances, unbalanced rations, lack of calcium balance in the blood, nervous influences, hypersensitiveness to certain proteins in animal and vegetable life, may be added as suggested factors in the production of itching skin associated with eczema.

With this comment upon itching skin, so commonly met in patients, particularly in the dry skin condition of winter months, one has need for frequent consultations with the dermatologist. Under the lash of a symptom like intolerable itching, the vexed patient has little patience for a painstaking inquiry such as the diagnostic routine of an internist requires. Often, only after the skilled dermatologist has alleviated the itching is there opportunity for a careful inquiry into the cause from the standpoint of internal medicine.

Results in 100 Cases of Gastro-Duodenal Ulcer Treated by Medical Means.*

One can hardly accurately evaluate statistics on the subject of the treatment of gastric and duodenal ulcer. Partisans of one method of treatment present results to support one, while an equally imposing array of figures may be presented to prove a different view. After a consideration of the subject one may feel that no one observer can summarize the whole question.

But Einhorn and Crohn summarize their follow-up of one hundred cases by noting that immediate end-results of medical treatment are satisfactory in eighty-four per cent of all cases of gastro-duodenal ulceration. It is noted that best results were gotten in cases beginning medical treatment early in the disease; also that youthful patients gave better results than other patients. It was observed, also, that equally good results were gotten in gastric as in duodenal ulceration. The patients who continued treatment for a long time got better results than those who failed to continue its use.

*Einhorn and Crohn—Amer. Journal of the Medical Sciences, Nov., 1926, page 691.

News Notes

The Washington Meeting of the A. M. A.

In May, the American Medical Association is to meet in Washington, D. C.,—so near home that none of our members should miss it. It will be a wonderful time of the year to take a short vacation and with two main automobile highways from this State leading into Washington, we should have a large representation of Virginia physicians. The railroads will also give a one and one-half fare rate to members of the American Medical Association for this occasion, on the certificate plan.

Perhaps no place of its size has more hotels than Washington, but, on account of the large number who will attend this meeting, reservations should be made in advance by those who expect to stay in Washington for the time of the meeting.

Set down the dates now—May 16th to 20th, inclusive.

The Association of Surgeons of the Atlantic Coast Line Railway,

At its meeting in St. Petersburg, Fla., in January, selected Virginia Beach, Va., as its 1928 place of meeting, and elected Dr. Edwin G. Moore, of Elm City, N. C., president for the ensuing year.

Dr. and Mrs. O. J. Henderson,

Of Montgomery, W. Va., and former residents of Heathsville, Va., are spending the winter in San Diego, California.

New Discovery May Explain Many Food-Poisoning Cases.

A new food poisoning organism discovered by a micro-biologist of the Bureau of Chemistry, U. S. Department of Agriculture, may possibly explain many poisoning cases that could not be attributed to organisms of the common food-poisoning group. Organisms of the latter group—known scientifically as the paratyphoid-enteritidis group—are the only ones hitherto recognized as a cause of intestinal disturbances. The new organism belongs to another group and in appearance has much in common with the ordinary lactic types used in the preparation of "starters" for butter and cheese making. It was first believed to be a source of food poisoning when it was found in a sample of imported cheese held responsible for an outbreak of Biddeford, Me., in 1925. Milk cultures of the organism were made and fed to cats in which violent intestinal disturbances were produced within a few hours. The same organism has since been isolated in two other outbreaks, in both of which cheese was the one article of food eaten by all persons affected. Organisms of the old group of food poisoners, so commonly reported to be the cause of food poisoning outbreaks, were not found. In each of these outbreaks the streptococci, the group to which the newly found organism belongs, were recovered and fed in milk cultures to cats with results like the first trials.

So far no sickness has been produced in experimental tests except when milk was used as a culture medium. The organism will grow and multiply on meat and other media, however, and this may possibly leave many avenues open for contaminating human food.

Dr. Charles Thom, in charge of microbiological work for the Bureau of Chemistry, regards the discovery of this organism as the most outstanding achievement of the year in his field of investigation. He further suggests that while there is no general danger from this source of poisoning it does offer another forceful argument for the pasteurization of milk before using it in manufacturing dairy products.

Children May Now be Legally Adopted in England.

Since January 1, 1927, children may be legally adopted in England. Except under certain conditions, the adopting person must be at least 25 years of age and 21 years older than the young person to be adopted, who must be under 21 years of age. A man may not adopt a girl, and no husband or wife may adopt without the consent of the other. The consent of the parents or those who have had the care or guardianship of the child must be obtained. The new law specifies the courts which may issue adoption orders and provides that certified copies of the entries in the "adopted-children register," which is to be kept by the Registrar-General, may be supplied under the same conditions as certified copies of births and deaths.

Dr. John Foote,

Washington, D. C., has been appointed by the Secretary of State as a delegate to the fifth Pan-American Child Health Congress, which convenes in Havana, Cuba, February 13th. Dr. Foote is professor of diseases of children at Georgetown University School of Medicine.

Dr. D. L. Elder

Has been re-elected a member of the Board of Directors of the Hopewell, Va , Chamber of Commerce for the year 1927.

Dr. S. E. Oglesby,

Lynchburg, Va., has been appointed city physician of that place to succeed Dr. Powell G. Dillard, resigned. Dr. Dillard had been city physician since November, 1922.

Dr. W. W. Wilkinson,

La Crosse, Va., has been re-elected one of of the directors of the Bank of La Crosse, for this year.

Dr. Hamilton J. Slusher,

Formerly of Boissevain, Va., but more recently of New Market, Md., has located in Frederick, Md., where he is associated with Drs. Smith and Thomas, of the Frederick City Hospital. In the near future, Dr. Slusher expects to limit his practice to pediatrics and obstetrics.

Dr. and Mrs. L. H. Apperson,

Richmond, after attending the meeting of the Atlantic Coast Line Surgeons in St. Petersburg, Fla., spent a short time visiting in Tampa and Jacksonville before returning home.

Dr. J. M. Henderson,

Williamsburg, Va., was accidentally shot by a friend while hunting on the last day of the hunting season. When the gun went off it sent fourteen shot into Dr. Henderson, wounding him in the face, arms and legs quite painfully, but it is hoped not seriously.

Dr. Roy A. Gregory,

Of the class of '25, University of Virginia, Medical School, is now serving an internship in eye, ear, nose and throat work in the New York Post-Graduate Hospital, New York City, his term of service being from August 1, 1926 to February 1, 1929.

Income Tax Time Again!

Don't overlook the filing of your income tax return on or before March the 15th. Failure to receive a blank does not excuse any one from making a return, if a single person had a net income of $1,500 or more, or a married couple a net income of $3,500 or more. If there is any doubt in your mind as to whether or not you may be exempt, make inquiry of your local collector of internal revenue. Failure to make a return may subject the taxpayer to a penalty of 25 per cent of the amount of the tax due. Certain deductions are allowed for professional expenses.

The Tri-State Medical Association of the Carolinas and Virginia

Is preparing to hold its usual pleasant and interesting meeting. The place is Columbia, S. C., the dates February 15 and 16. Dr. A. J. Crowell, Charlotte, N. C., is president, and Dr. James K. Hall, Richmond, Va., secretary.

Dr. Roderick Dew,

Woodford, Va., has been spending some time in Richmond, where he has been under treatment at a local hospital.

Dr. William J. Olds,

After having lived in Front Royal, Va., about fourteen years, closed his office in that place early in January and accepted an appointment as eye, ear, nose and throat spec-

ialist in the Hospital Service of the United States Veterans' Bureau. He is at present located at Chillicothe, Ohio, in which place his wife and daughter expect to join him shortly.

Prior to accepting the appointment with the Veterans' Bureau, Dr. Olds held a commission as Major in the Medical Officers' Reserve Corps of the U. S. Army, having served during and after the World War as a specialist in several General and Base hospitals of the Army. He was formerly vice-commander and chaplain of Warren Post 53, American Legion.

Dr. Rees Morgan,

Of the class of '24, University of Virginia, Medical School, and recently at Touro Infirmary, New Orleans, is now at Drexel Hill, Pa.

Sight Saving Classes.

The National Committee for the Prevention of Blindness announces that there are approximately 264 sight saving classes in the United States today, but that there should be 5,000 more if public school children who have seriously defective vision are to be taught to conserve their sight. It has been estimated that it costs ten times as much to educate a blind child as a normally sighted one, and experience shows that it is possible to educate in public schools with normally sighted children a very large proportion of children, who, though not wholly blind, were formerly sent to schools for the blind.

Dr. Ashby Turner,

Of Harrisonburg, Va., is spending the winter at Dania, Florida.

The Walter Reed Commission

Of the Medical Society of Virginia held a meeting in January, upon call of its chairman, Dr. E. C. S. Taliaferro, of Norfolk. It was stated that "Belroi", the birthplace of Dr. Walter Reed in Gloucester County, Virginia, had been purchased by the Medical Society of Virginia and presented to the Commission in accordance with a resolution adopted at our last meeting. This place is to be preserved as a public shrine in honor of Dr. Reed.

The next work which the Commission wishes to undertake is the establishment of a chair in medical research as a memorial to Dr. Reed for the service he rendered the world by the eradication of yellow fever.

Dr. R. B. Ware,

Amherst, Va., was elected a member of the board of directors of the Bank of Amherst at its annual meeting last month.

Dr. T. M. Raines,

Wakefield, Va., was a recent visitor in Richmond, having come to be with his wife who was a patient in a local hospital.

Dr. L. M. Abbott,

Recently of Lignite, Va., has located at Parrott, Va.

Dr. J. A. Gilmer,

Big Stone Gap, Va., who has been suffering from a bad case of septic poisoning for sometime, is now much improved but is continuing treatment under specialists in Richmond.

Work of Women and Children in Chefoo, North China.

A decline in the hair-net industry, due to the bobbed-hair craze in recent years, has thrown large numbers of women and children out of work in Chefoo, North China. Appalling conditions are described as existing among women and children in various industries, including the hulling and sorting of peanuts, match packing, embroidering, and winding silk. The working day is generally from early daylight to dark. Pay ranges from six cents a day for unskilled workers and children to eight to sixteen cents for skilled labor.

Tularaemia.

In view of the fact that several cases of Tularaemia have been reported in Virginia in recent months, and as it is a new disease about which few doctors know, we take pleasure in publishing in our Miscellaneous Department of this issue a few notes which were made by Mr. A. H. Straus, Director of the State and Richmond Laboratories, upon the request of Dr. E. G. Williams, State Health Commissioner. These should be of interest to all practicing physicians in the State.

Dr. E. T. Trice,

Richmond, suffered a fractured collar bone and was badly shaken up when his horse slipped while he was riding with a party at the Deep Run Hunt Club the latter part of last month. He is much improved now.

Dr. J. M. Miller,

Wytheville, Va., was elected president of the board of directors of the Bank of Crockett, at their annual meeting last month.

Dr. E. G. Brumback

Returned to his home in Luray, Va., the latter part of January, after a short stay in Washington, D. C.

The Clinical Club of Washington

Was recently organized in Washington,

D. C., with Dr. Everett M. Ellison as president, Dr. J. Winthrop Peabody as vice-president, and Dr. Harry S. Bernton secretary-treasurer. There are thirty-three members and meetings will be held monthly. The purpose of this organization is to promote the professional and social interest of its members.

Dr. Edward L. Boone,

Rich Square, N. C., of the class of '26, Medical College of Virginia, has just located at Branchville, Va., where he is doing general practice and running a drug store.

Dr. S. E. Massey

Announces that his address should be Amonate, Va., instead of Beech Fork, W. Va., as formerly.

Dr. T. Edwin Baird

Returned to his home in Norfolk, Va., the latter part of January, after spending several weeks in Richmond.

Dr. and Mrs. W. B. Barham,

Of Big Stone Gap, Va., are visiting their son-in-law and daughter, Dr. and Mrs. James A. Grizzard, at Drewryville, Va.

The Southwestern Virginia Medical Society

Is arranging to hold an unusually interesting meeting in Pulaski, March 24th and 25th, under the presidency of Dr. Z. V. Sherrill, of Marion. In addition to a large number of voluntary papers, there will be a symposium on "Acute Abdomen in Children Under Ten Years of Age", which will be discussed by Drs. F. H. Smith, of Abingdon, C. D. Nofsinger and Roger DuBose, of Roanoke, and W. C. Caudill, of Pearisburg. Invited guests include Dr. E. C. S. Taliaferro, of Norfolk, Dr. L. T. Price, of Richmond, and Dr. Ennion G. Williams, State Health Commissioner.

Dr. Murat Willis,

Of Richmond, in January visited Huntington, W. Va., where by invitation he presented a paper on "Ulcers" before the society meeting there.

Dr. William E. Croxton,

Of West Point, Va., who recently underwent an operation at a Richmond hospital, is reported as much improved.

Dr. George P. Hamner,

Formerly of Lynchburg, Va., has moved to Tampa, Florida, where he is associated with the John S. Helms Clinic in the Citizens Bank Building of that place. Dr. Hamner is limiting his work to internal medicine and is giving special attention to gastroenterology.

Dr. J. E. Mackenty,

Senior surgeon of the Manhattan Eye, Ear and Throat Hospital, of New York City, by invitation addressed the Norfolk County Medical Society on the evening of January the 31st. His subject, "Early Diagnosis and Radical Treatment of Laryngeal Cancer", was illustrated with lantern slides.

Dr. A. W. Lewis,

Recently of Bruington, Va., has moved to Aylett, Va., where he has purchased the residence of the late Dr. J. B. Moore. Dr. Lewis was recently elected a director of the Southside Bank at Tappahannock, Va.

The Weekly Public Health Reports

Of the U. S. Public Health Service are now available to all persons in the United States and its possessions, Canada, Cuba, and Mexico, for the nominal subscription of $1.50 per year, it was announced in the current issue of the official bulletin of the Post Office Department.

The announcement states that these reports will be sent with postage prepaid to each subscriber, and represents an innovation by the Public Health Service to further increase knowledge about public health and sanitation. These Reports contain information as to the world prevalence of disease, and each issue has special articles by experts on sanitation.

Subscriptions should be accompanied by money orders, and sent to the Superintendent of Documents, Government Printing Office, Washington, D. C.

Dr. Lord's Home Destroyed by Fire.

The home of Dr. Frank K. Lord, of Highland Park, Richmond, was virtually destroyed by fire which started from a defective flue, on January the 11th.

Dr. L. F. Hansbrough,

Front Royal, Va., was elected a member of the board of directors of the Bank of Warren, at its annual meeting in January.

Post-Graduate Instruction in Eye, Ear, Nose and Throat, Bronchoscopy and Esophagoscopy

Will be given at the Gill Memorial Eye, Ear and Throat Hospital, Roanoke, Va., beginning Tuesday, March the 15th, through Saturday the 19th. The class to take this course will be limited to twenty and a registration fee of $25.00 will be charged to cover the necessary expenses of arranging for the program.

Clinics will be conducted by Dr. Wells P. Eagleton, of Newark, N. J., Dr. C. C. Coleman, of Richmond, Va., Mr. E. B. Burchell,

of the School of Ophthalmology and Otology of the New York Eye and Ear Infirmary, Dr. Lewis H. Clerf, of the Bronchoscopic Clinic of Jefferson Hospital, Philadelphia, Dr. E. G. Gill, of Roanoke, Dr. John Randolph Page, of New York, Dr. Ross Hall Skillern, Philadelphia, Dr. J. Eastman Sheehan, New York, Dr. John M. Wheeler, of New York, and Dr. John W. Burke, of Washington, D. C. In addition to the clincs to be held in the mornings and afternoons, there will also be round table discussions at luncheon for each of the five days.

Dr. and Mrs. John Dunn,

Of Richmond, are spending sometime visiting in Florida and do not expect to return home until the end of February.

Dr. H. A. Spitler,

Middleburg, Va., has been elected vice-president of the board of directors of the Middleburg National Bank for the coming year.

Child Marriages in Pennsylvania.

The Public Charities Association of Pennsylvania plans to introduce in the 1927 General Assembly a Child Marriage Bill raising the minimum age to at least 16 years for both sexes, and a Hasty Marriage Bill requiring a five-days' interval between the application for and granting of a license. The present legal minimum age is 14 for boys and 12 for girls, and a recent study made by the association's child-welfare division revealed that 521 girls under the age of 16 were married in the State during 1924.

Big Building Program to be Put on by Medical College of Virginia.

The executive committee of the board of visitors of the Medical College of Virginia, Richmond, has authorized President W. T. Sanger and the college authorities to map out a twenty-year building program preliminary to the construction of three new buildings projected for the immediate future. These will include a women's dormitory, a new clinic for the walking sick, and laboratory for chemistry, bacteriology, and pathology.

Dr. H. L. Segar,

Warsaw, Va., has recently returned home after being a patient at Johns Hopkins Hospital, Baltimore.

Abbott Laboratories Sales School.

During the last week in December, the salesmen of the Abbott Laboratories and the Dermatological Research Laboratories from the Middle West and the South met in the home offices of that Company. Over forty representatives of the Company were present. The time was spent in intensive study of the Company's products, and playlets were staged illustrating sales points and round tables were conducted on subjects of importance to the salesmen and the firm. During this meeting, the salesmen attended the annual Christmas dinner and dance given by the employees and were entertained at a banquet given by the Abbott Laboratories in their own cafeteria recently installed at the North Chicago plant. At this meeting interesting talks were given with regard to the pharmaceutical products put out by the Company.

In January, the Eastern sales force held a meeting of the same kind in New York City.

Three Million Deafened School Children in the United States.

The extent of deafness discovered in recent surveys among the children of New York State indicates that there are more than 3,000,000 hard-of-hearing children in the United States. It therefore seems important that all children should be tested for hearing, and a method has been devised, through the use of a phonograph and individual telephones, by which 40 children may be examined at a time.

The American College of Surgeons

Held its sectional meeting for Maryland, District of Columbia, Virginia and West Virginina in Washington, D. C., January 17 and 18. Dr. Hugh Trout, Roanoke, was elected chairman of the Virginia section, Dr. Julian L. Rawls, Norfolk, secretary, and Dr. Joseph T. Buxton, Newport News, councilor. The 1928 meeting is to be held in Roanoke, Va.

Dean of School of Medicine at Duke University.

Dr. Wilburt Cornell Davison, associate professor of pediatrics and assistant dean of the Medical School of Johns Hopkins University, Baltimore, has been elected dean of the new school of medicine to be established at Duke University, Durham, N. C. Dr. Davison is expected to enter upon his new duties in the fall of 1927.

Dr. William R. Gwathmey,

Of Ruark, Va., received a number of bruises and cuts, the latter part of January, when his automobile skidded and went into a telegraph pole.

Dr. R. H. Fuller,

Clover, Va., is at the New York Polyclinic

Medical School and Hospital, where he is taking special work in surgery and gynecology.

Place and Date of our Next Meeting.

The Executive Council of the Medical Society of Virginia, at its meeting on February the 5th, voted to accept the invitation of the Dinwiddie County Medical Society to hold our next annual meeting in Petersburg, and set the date as October 18, 19 and 20.

Dr. Garnett Nelson,

Richmond, was re-elected president of the Richmond Tuberculosis Association at its annual meeting the first of this month.

Dr. L. M. Allen,

Winchester, Va., was in January elected one of the directors of the Clarke County Horse and Colt Show Association.

Dr. R. W. Quaintance,

Formerly of Lundale, W. Va., is now located at 502 Tenth Avenue, Huntington, W. Va. Dr. Quaintance is an alumnus of the former University College of Medicine of Richmond, Va.

Dr. Charles R. Anderson,

Winchester, Va., was a recent visitor in Baltimore, Md., having gone there on professional business.

The New York Polyclinic Medical School and Hospital,

Through its medical staff of 275 physicians, Nurses' Alumnae Association, Auxiliary Board, patrons and trustees, is concentrating its efforts upon obtaining $500,000 for building a nurses' home and training school. The Polyclinic, with the exception of four years during the war devoted exclusively to the care of American wounded soldiers, has for forty-six years not only given treatment to hundreds of thousands of patients, but also post-graduate instruction to over 20,000 practicing physicians, thereby benefiting communities throughout the world by increasing the efficiency of their local physicians. This service has been rendered without endowment fund and this first appeal for aid is with a view to enlarging benefits to be rendered physicians, nurses and the public.

Contributions should be sent to the Polyclinic Medical School and Hospital, 345 West 50th Stret, New York, N. Y.

Dr. L. S. Early,

Petersburg, Va., has been elected one of the directors of the Union Trust and Mortgage Company of that city.

Boy Immigrants in Canada and New South Wales.

By agreement between the British and Ontario Governments, commencing in the spring of 1927 boys from Great Britain, 15 to 17 years of age, may have free passage to the Province, be given agricultural training, and then be placed with reliable settlers at wages of about £2 per month, board, and lodging. The boys are to remain in these positions for three years, getting practical agricultural experience under supervision.

Last year New South Wales passed an act giving the minister of labor and industry the care and control of juvenile immigrants from 14 to 18 years of age, and empowering him to designate farms for their reception and training, to place them on such farms, and ultimately to find them employment. The transfer or dismissal of such juvenile immigrants is not permitted except after seven days' notice in writing to the minister of labor. This law supplants the unsuccessful indentured apprenticeship system established in 1923 under which the children were not adequately protected. By July 20, 1926, a total of 1,444 boys had entered under the boy-immigrant scheme.

The U. S. Civil Service Commission,

Washington, D. C., announces the following open competitive examinations, information about which may be received from the Commission, or the secretary of the board of U. S. Civil Service Examiners at the post office or custom house in any city:

Physiotherapy aide, physiotherapy pupil aide, and physiotherapy assistant, applications to be on file at Washington not later than March 12 and May 28, 1927;

Assistant medical officer, associate medical officer, medical officer, and senior medical officer, applications to be rated as received at Washington until June 30, 1927; and.

Graduate nurse and graduate nurse (visiting duty) applications to be rated as received at Washington until June 30, 1927.

The Virginia Tuberculosis Association

Will hold its annual meeting in Richmond, on Friday, February the 18th, the president, Dr. Charles R. Grandy, of Norfolk, presiding. Following business sessions in the afternoon, there will be a meeting in the evening at 8 P. M., in St. Paul's Parish House, 815 East

Grace Street, which will be open to the public and the profession. The address on this occasion will be delivered by Dr. Linsly R. Williams, managing director of the National Tuberculosis Association of New York City. It is hoped that there will be a large attendance.

Wanted—

As assistant physician in coal mining practice at Minden, W. Va., a young single man who does not mind work. Attractive salary to the right man. Address "Doctor", Minden, W. Va. (Adv.)

Obituary

Dr. Walter Cox,

Winchester, Va., member of the Executive Council of the Medical Society of Virginia from the Seventh Congressional District, was found dead in bed at his home in that place on the morning of January the 16th, death being due to heart trouble. He had only recently returned from Baltimore, where he went to consult a heart specialist. Dr. Cox was born in Charles County, Maryland, little more than fifty-four years ago, and, after taking his A. B. degree from Johns Hopkins University, studied medicine at the Baltimore University Medical School from which he graduated in 1898. Shortly thereafter, he was given a commission in the medical corps of the U. S. Army and saw active service in the Spanish American War. Following this, he went to the Philippines as a captain in the medical corps during which time he did quite a good deal of research work in tropical diseases.

Dr. Cox located in Winchester about eighteen years ago, since which time he had been actively identified with the medical interests of that section, and had also taken a prominent part in community affairs. Dr. Cox had for sometime been city health officer of Winchester, and was one of the original members of the local Kiwanis Club. His genial disposition had won for him many friends among the profession and laity. He is survived by his wife, to whom he was married last summer, and a daughter by a former marriage.

Dr. John T. B. Hyslop,

Of Belle Haven, Va., died at a Norfolk hospital, January 7th, aged sixty-two years. Upon receiving his diploma in medicine from the University of Maryland in 1885, he at once located at Belle Haven, where he was in active practice for nearly forty years, until forced to retire on account of his health. Dr. Hyslop was a member of the Medical Society of Virginia and was recognized as one of the leading citizens of the Eastern Shore, being actively identified with many of its business interests. His wife and a large family connection survive him.

Dr. Hampden Aulick Burke,

Son of Dr. Joseph M. Burke, chief surgeon of the Seaboard Air Line Railway, died January 13th at the home of a cousin in Shepherdstown, West Virginia, after a brief illness with pneumonia, Dr. Burke was born in Prince George County, Virginia, forty years ago. Upon receiving his degree from the Medical College of Virginia in 1907, he served an internship at St. Vincent's Hospital, Norfolk, Va. After this he joined the Medical Society of Virginia and located in Petersburg where he practiced for sometime and was recognized as one of its leading surgeons. His widow and son survive him.

Dr. Alvin Davies Lamberth,

Clinician and assistant to Dr. Joseph T. Buxton at the Elizabeth Buxton Hospital, Newport News, Va., was found dead in his apartment in that city, January 24th, death having been due to heart disease. He received his medical education at the Medical College of Virginia, from which he graduated in 1924. He was a member of the Medical Society of Virginia. Dr. Lamberth was a native of Gloucester County, Virginia, and twenty-seven years of age.

Dr. Frank Lee Campbell,

Prominent physician of Culpeper County, Virginia, died suddenly at his home at Jeffersonton, Va., in the early morning of January the 26th, death being due to acute heart disease. He was born in Luray, Va., June 3, 1865, and graduated in medicine from the College of Physicians and Surgeons of Baltimore in 1890. He at once located at Jeffersonton and was engaged in active practice for nearly thirty-seven years. Dr. Campbell was recognized as one of the County's most prominent physicians, and at the time of his death was one of the few old "family physicians" in that section. He is survived by his wife, who was a Miss Morrison, of Luray, Va., and two daughters, besides a number of more distant relatives.

Virginia
State Board of Health
Antitoxins and Vaccines

These Products are sold at special prices and are produced by The Gilliland Laboratories under Government License No. 63.

DIPHTHERIA ANTITOXIN
(Concentrated and Refined)

1,000 Units Syr. Pkg.	$ .60
5,000 Units Syr. Pkg.	1.71
10,000 Units Syr. Pkg.	3.00
20,000 Units Syr. Pkg.	5.40

SMALL-POX VACCINE

2 Vaccinations per Pkg.	$ .24
5 Vaccinations per Pkg.	.45
10 Vaccinations per Pkg.	.90

TETANUS ANTITOXIN
(Concentrated and Refined)

1,500 Unit Syr. Pkg.	$1.50
10,000 Unit Syr. Pkg.	7.20

TOXIN-ANTITOXIN MIXTURE

3 Ampul Pkg. (1 Immunization)	$ .60
3 Syr. Pkg. (1 Immunization)	1.35
30 Ampul Pkg. (10 Immunizations)	4.80
1-30 cc Vial (10 Immunizations)	1.50

SCHICK TEST

1 Pkg. sufficient for 50 tests	$ .90
1 Pkg. Control, 50 tests	.90

TYPHOID VACCINE

3 Ampul Pkg.	$ .45
3 Syr. Pkg.	1.35
30 Ampul Pkg. (10 Immunizations)	3.00
10 cc Vial (4 Immunizations)	1.05
20 cc Vial (8 Immunizations)	1.80

SCARLET FEVER ANTITOXIN
(Concentrated and Refined)

Prophylactic Pkg.	$1.50
Therapeutic Pkg.	4.80

RABIES VACCINE
(Human)

Pasteur Treatment, 21 Injections	$24.00

RABIES VACCINE
(Canine)

5 cc Vial (1 Immunization)	$ .30

PERTUSSIS VACCINE

4 Ampul Pkg.	$1.20
4 Syr. Pkg.	2.40
10 cc Vial	1.20

ORDER FROM YOUR STATE BOARD OF HEALTH, RICHMOND, VIRGINIA, AND DERIVE THE ADVANTAGES MADE POSSIBLE BY THIS CONTRACT.

Gilliland Products are exchangeable for fresh, without charge, at the expiration of the guarantee date.

The Gilliland Laboratories

Producers of Biological Products

MARIETTA, PENNA.

Capital $1,000,000 Surplus Earned $1,500,000

ESTABLISHED 1892

To act as Executor, Guardian and Trustee
$30,000,000
of investments held in Trust

Confidential Interviews Invited.

Established 1861

HANGER SUBSTITUTE LEGS AND ARMS

—are the result of sixty-five years' experience in limb manufacture.
—are considered Nature's Rivals. Users throughout the entire world recommend and endorse Hanger Limbs as the best obtainable.

J. E. HANGER, Inc.

WASHINGTON, D. C.,
221-223 G. St., N. W.

BLUEFIELD, W. VA.,
614 Raleigh St.

also in 20 other American and European cities.
Three Travelling Representatives in Virginia

Soundness First—Size Afterward

Here at the First and Merchants we first seek sound accounts—size is a secondary consideration after we have satisfied ourselves that they measure up to our standards of quality.

This policy means safety to all our depositors.

Our large resources enable us to meet the demands of sound business in the Southeast—Transportation, Manufacturing; Jobbers, Retailers and Personal accounts.

FIRST AND MERCHANTS National Bank of Richmond

JOHN M. MILLER, JR., President

Capital, Surplus and Undivided Profits $6,300,000

Virginia Medical Monthly

OFFICIAL ORGAN OF THE MEDICAL SOCIETY OF VIRGINIA

Vol. 53, No. 12.
WHOLE No. 897.

RICHMOND, VA., MARCH, 1927

$2.00 A YEAR
20 CENTS A COPY

OF MEDICINE
LIBRARY

CONTENTS.

ORIGINAL COMMUNICATIONS:
The Treatment of Spasmodic Torticollis by Intradural Posterior Root Section and Extracranial Division of the Spinal Accessory. Claude C. Coleman, M. D., Richmond, Va. 761
A Review of Various Methods Proposed for the Treatment of Mercuric Chloride Poisoning. Chas. C. Haskell, M. D., Richmond, Va. 765
Heart Sounds and Their Interpretation. Garnett Nelson, M. D., Richmond, Va. 769
Purpura of the Urinary Tract. Joseph F. Geisinger, M. D., Richmond, Va. 772
The Reticulo-Endothelial System With Special Reference to the Lymphocyte. H. E. Jordan, Ph. D., University, Va. 776
Harelip and Cleft Palate. J. S. Horsley, Jr., M. D., Richmond, Va. 782
A Study of Acute Upper Respiratory Infections. Wyndham B. Blanton, M. D., Richmond, Va. 787
Grain of Corn in Right Main Bronchus: Removal by Use of Bronchoscope. E. G. Gill, M. D., Roanoke, Va. 792
What's It All About? Wright Clarkson, M. D., Petersburg, Va. 793
Congenital Torticollis. By Paul C. Colonna, M. D., New York, N. Y. 794
Diet in Treatment of Pernicious Anemia. Estill L. Caudill, M. D., Narrows, Va. 796
Radiological Studies of the Gall-Bladder. R. G. Waterhouse, M. D., Kinston, N. C. 798
Contacts in Public Health Work. Roy K. Flannagan, M. D., Richmond, Va. 801
CORRESPONDENCE 805
MISCELLANEOUS 806
BIBLIOTHECA OBSTETRICA 808
WOMAN'S AUXILIARY MEDICAL SOCIETY OF VIRGINIA 809
THE TRUTH ABOUT MEDICINE 810
EDITORIAL 812
NEWS NOTES 813
OBITUARY 819

INDEX OF ADVERTISERS—Advertising Page 5.

OLD FRIENDS ARE BEST

TIME provides the acid test for many things. Acquaintance grows into respect and respect into friendship as the years pass and positive qualities have an opportunity to assert themselves. It is thus with human friendships, and we see a marked parallel in the relation of the physician to the drugs upon which he relies.

New and untried remedies come and go. Many enjoy a brief moment of popularity. Few survive the acid test of time.

Creosote is still a favorite drug for use in the treatment of bronchitis, tuberculosis, and as an intestinal and urinary antiseptic. Its expectorant and antiseptic properties are generally recognized and the discovery of Calcreose more than a score of years ago has largely overcome its principal defect, which was the tendency to cause gastric disturbance.

The Maltbie Chemical Co. of Newark, N. J., contributed a distinct improvement to the Materia Medica of our time when it made Calcreose available as a therapeutic agent. By combining a high quality of creosote with hydrated calcium oxide we have been able to prepare a compound of creosote which breaks up rapidly in the intestinal tract, releasing the creosote for therapeutic purposes and avoiding the usual disturbance experienced when plain creosote is used.

Another advantage of Calcreose over plain creosote is that it is a powder and can be manufactured into tablets, thus facilitating the administration of this valuable drug.

We are always glad to supply samples of Calcreose Tablets to physicians for their personal use or for the purpose of testing its value upon their patients.

POWDER ::: TABLETS ::: SOLUTION

THE MALTBIE CHEMICAL COMPANY

Manufacturers of Pharmaceutical Products

NEWARK, N. J.

COMPLETE CATALOGUE ON REQUEST

A New Booklet on

MEAD'S DEXTRI-MALTOSE

THIS booklet, "Bottle Feeding of the Majority of Infants," outlines how cow's milk and two such reliable infant feeding materials as Mead's Dextri-Maltose and Casec are used by physicians to prescribe feeding formulas for the large majority of well and sick infants.

The reasons why Mead's Dextri-Maltose has gained its reputation for dependability are also shown. Some of the items of Mead's infant feeding service are described in detail and we believe they will interest the physician for they offer a number of time-saving conveniences.

CONTENTS

The Feeding of Well Babies

Mead's Dextri-Maltose

Certain Types of Sick Infants

Casec, with Cow's Milk and Water
Diarrhoea (Fermentative, Summer)
Non-Thriving Breast-Fed Babies
Colic in Breast-Fed Babies
Breast-Fed Babies with Loose, Green Stools

Mead's Infant Feeding Service

Pocket Case of Feeding Formulas
Dextri-Maltose Prescription Blanks
Casec Prescription Blanks
Booklets, "Instructions for Expectant Mothers"

THE MEAD POLICY

MEAD'S infant diet materials are advertised only to physicians. No feeding directions accompany trade packages. Information in regard to feeding is supplied to the mother by written instructions from her doctor, who changes the feedings from time to time to meet the nutritional requirements of the growing infant. Literature furnished only to physicians.

MEAD JOHNSON & CO., EVANSVILLE, INDIANA
Please send me your Booklet "Bottle Feeding of the Majority of Infants" and samples of Mead's Dextri-Maltose.

Name_____ M. D.
Street_____
City_____ State_____

Mead Johnson & Co.
Evansville, Indiana
Infant Diet Materials Exclusively

Virginia Medical Monthly

Official Organ of the Medical Society of Virginia

Vol. 53, No. 12.
WHOLE No. 897

RICHMOND, VA., MARCH, 1927

20 CENTS A COPY
$2.00 A YEAR

THE TREATMENT OF SPASMODIC TORTICOLLIS BY INTRADURAL POSTERIOR ROOT SECTION AND EXTRACRANIAL DIVISION OF THE SPINAL ACCESSORY.*

By CLAUDE C. COLEMAN, M. D., Richmond, Va.
Department Neurological Surgery, Medical College of Virginia.

The purpose of this paper is to report a case of spasmodic torticollis and to discuss briefly a type of surgical procedure employed to relieve the condition. The physiologic basis of the operation used in this case justifies the hope that it offers an additional means of overcoming a very stubborn disability.

D. J., aged 34, married, traveling salesman, was referred by Dr. Beverley R. Tucker, on January 17, 1926. In May, 1924, the patient had a high fever which lasted a day or two and toward the latter part of this attack he began to suffer with soreness and stiffness in the right side of the neck followed by jerking of the head and tonic spasm. The past history of the patient before the onset of torticollis showed that he had had repeated attacks of malaria; his tonsils had been removed twenty years before and a second tonsil operation done in 1921. In 1911, during a football game he received a fracture of the skull and probably a fracture of the outer edge of the left clavicle. There was no history or clinical evidence of syphilis or previous nervous disease. A submucous resection of the nasal septum with subsequent operation upon the turbinates and removal of nasal polyps had been done in 1924 to relieve a chronic nasal obstruction. There had been impaired hearing on the right side for a number of years, attributed to a chronic infection of the middle ear. His treatment for torticollis prior to operation in 1926 consisted of attempts to eradicate focal infection, intelligent physiotherapy, electricity and mechanical bracing of the head by means of a plaster cast. It was found to be impossible, however, to apply a cast of sufficient strength to prevent the contraction of the neck. Marked variation was reported in the severity of the attacks prior to operation. Sometimes improvement followed massage and again the patient felt better after operation upon the nose. There was never a complete disappearance of the spasm, but whenever the powerful tonic spasms which drew the occiput downward and to the right were lessened in severity, the patient felt greatly relieved.

Examination of the patient at time of his admission to the hospital in 1926 showed a powerful, athletic man 6 feet 3½ inches in height and weighing 260 pounds. The circumference of the neck had increased one inch since the onset of his trouble and at the time of his operation it was 18½ inches. The general examination, apart from the head and neck, was of no particular interest. The contraction of the neck muscles was typical of torticollis, which is well illustrated in the photographs Nos. 1 and 2. The patient frequently used his hands to flex the head when the tonic spasm of the posterior cervical muscles would retract the occiput. The chin was drawn upward and deviated to the left. The right ear was brought almost in contact with the right shoulder. The spasms were not confined to the right posterior muscles but at times the occiput would go almost directly backward. The usual position of the head, however, was with the occiput retracted and to the right with the chin well up and to the left. At times there would be clonic twitching of the chin but there was no overflow from the neck region except to the frontalis muscles, causing some corrugation of the brow during the most marked tonic spasm. The patient was becoming almost completely disabled and for eighteen months before admission to the hospital his time had been given almost entirely to one form of treatment or another. He had had a marked change of voice for many years. The voice was thick and tremulous and enunciation appeared to be difficult. Examination of the vocal cords, however, showed normal motor function. There was a slight, inconstant nystagmus both to the left and right. The cranial nerves were normal with the exception of the eighth and the right spinal accessory. The spasms of the neck, as is usually the case, were greatly intensified by

*Read before the Southern Surgical Association at Biloxi, Miss., December 14, 15 and 16, 1926.

walking or any motor activity. X-ray examination of the head and cervical spine was negative.

This patient was shown at a meeting of the Society of Neurological Surgeons in 1924 and there was general agreement by those present that the case was one of intractable spasmodic torticollis, requiring a radical type of operation. Attention was called to a similar case reported in *Surgery, Gynecology and Obstetrics* by McKenzie from Dr. Cushing's clinic in 1924. In this case Dr. Cushing had divided the anterior and posterior roots of the 1st, 2nd and 3rd cervical nerves on the right, combined with an intracranial section of the right spinal accessory. The success of the operation was reported by McKenzie as beyond expectations. In discussing the condition McKenzie suggested the possibility of relief of spasmodic torticollis by a bilateral section of a number of posterior cervical nerve roots together with a section of the accessory. Because of the bilateral involvement in our case it appeared unlikely that any operation dealing with one side alone would be satisfactory. The possibility of breaking the spasm by destruction of the afferent nerves from the involved muscles had been amply demonstrated by the work of Sherrington in studies of decerebrate animals. It was decided to adopt McKenzie's suggestion in the case reported and to divide four upper posterior roots after an exploration of the right cerebello-pontile angle. A slight nystagmus and impaired hearing on the right side made it advisable to consider the possibility of a lesion in the right cerebello-pontile angle. Because of the temporary paralysis of the right vocal cord in the case reported by McKenzie, following intracranial section of the spinal accessory, preference was given to a section of this nerve in the neck.

Operation:—On January 25, 1926, with the patient placed on a cerebellar frame, a midline incision was made from just above the external occipital protuberance down to the 6th cervical spine. A short horizontal incision above the superior curved line crossed the median incision very much as short arms of a cross-bow incision is used for a cerebellar operation. By keeping in the midline, hemorrhage was not troublesome but the considerable depth of the wound slowed up the operative manipulations considerably. The laminae of the 1st, 2nd and 3rd vertebrae were removed and the posterior rim of the foramen magnum, along with an area of bone about 2 inches in diameter, mostly to the right side, was ronguered away. The dura was opened and a superficial examination made of the right cerebello-pontile angle. Nothing abnormal was discovered. The posterior roots of the 1st, 2nd, 3rd and 4th nerves were divided on each side—Figure No. 1. The identification of the 1st right posterior root was not accurate, but inasmuch as there is considerable variation of this nerve and its afferent function is evidently low, it was not of

No. 1. Photograph of patient in one of the severe spasms of the neck muscles before operation. The occiput was brought almost in contact with the shoulder which was elevated in the spasm.

No. 2. Posterior view of the patient showing marked rotation of the chin to the left but without retraction of the occiput.

great importance to divide it. Because of the muscular development of the patient the difficulties of operation were such as would attend any of the radical operations for this disease. The 2nd cervical nerve root required ligation

Fig. 1. a.—Exposure of upper cervical cord and medulla. The posterior roots have been divided just proximal to their entrance into the dura. The drawing gives no idea of the depth of the wound in a patient of a large size and great muscular development. The spinal filaments of the accessory nerve are seen passing upward anterior to the sensory roots. The dura was carefully closed after section of the roots.
b.—Shows the skin incision.

before division, because of a vessel of considerable size which accompanied the nerve root. The spinal filaments of the accessory nerve were brought into view and a section made of some of the lower ones. The dura was carefully closed and a closure of the muscles and skin made in layers. The patient stood the operation well and his convalescence was without incident. Upon his recovery from the anesthesia he experienced great relief of the spasm which before the operation had become troublesome even when lying in bed. Spasm of the posterior muscles did not return after the operation but there was some deviation of the chin to the left. During the following two weeks and before the spinal accessory was divided, it was possible to make careful observation as to the effects of posterior root division alone. The right accessory nerve was then resected

No. 3. Midline incision is shown. A transverse incision about 2 inches in length was made above the deep wrinkle which is plainly shown.

under local anesthesia by my associate, Dr. J. G. Lyerly, just proximal to its entrance into the sternomastoid muscle. The patient was discharged from the hospital one month after his admission. A number of examinations have been made of the patient since this time, the most recent of which was on October 4, 1926, about nine months after operation.—Photographs Nos. 3 to 7. The patient considers himself practically well. At times in talking and sometimes in driving, there is a slight tendency

No. 4. Photograph of patient six weeks after operation. Note the position of the chin in the midline.

for the occiput to pull to the right. This causes little inconvenience and may be promptly corrected. He has some difficulty in raising the right arm to his head. The patient states that while he felt there was great improvement immediately after the operation, the maximum benefit had not been attained until about nine months after the operation. The anesthesia resulting from division of the posterior cervical roots was not troublesome. Figure No. 2. The spinal accessory nerve was atrophied and the lower belly of the omohyoid stands out prominently. He is able to carry his chin with ease and comfort either to the left or right. There has been no improvement in the voice. Microscopic examination of the resected portion showed nothing of particular significance.

No. 5. Head in position as before operation but with no spasm.
No. 6. Patient with head to the right. This was almost impossible before the operation.

No. 7. Patient standing. Note the atrophy of muscles of right side of neck. The neck spasm before operation was usually intensified upon standing or walking.

In resection of the upper four posterior roots to abolish spasm of the cervical muscles it is at once obvious that a number of muscles involved in the spasm are supplied by all of the cervical nerves. Only the spinal accessory, trapezius and upper rotators would have their entire afferent supply destroyed by the operation, while the splenius, semispinalis and some of the long extensors would not be affected in their lower cervical segments. It would be feasible as suggested by McKenzie to include the 5th and 6th posterior roots in the section. If carried lower there would be some anesthesia of the hand. Posterior root section may be combined with section of the 1st and 2nd anterior cervical roots depending upon the amount of spasm. Involvement of the muscle groups indicates some impairment of higher control, but it is difficult to accept Oppenheim's theory that the lesion is in the cerebral centers representing the movements of the neck. The tonic spasms of torticollis resemble an exaggerated fixation of the muscles which normally maintain the head in the erect posture. Attention has been called to labyrinthine disturbance as a possible cause of this disease. In the case reported the patient had some nystagmus and impaired hearing on the right. There has been an accumulation of data to indicate that the condition may be a postural defect of the antigravity muscles. Unilateral section

of the posterior nerves for spasmodic torticollis was reported by Dr. Alfred S. Taylor in Johnson's Operative Therapeusis. In a similar operation he divided the spinal portion of the accessory nerve. He regarded the result as partly satisfactory at the end of three years.

The operation of high cervical laminectomy directly impairs, at least temporarily, the function of some of the muscles concerned in the spasm, notably the splenius, inferior oblique and portions of the complexus. This direct interference with the muscles themselves may be a factor in the results. In a most important recent contribution in the Annals of Surgery, 1925, Dr. Finney carefully reviews the literature and summarizes briefly all that is known of the etiology and diagnosis of this condition. As a result of his observations he advocates a well planned procedure, having for its object the extraspinal section of the anterior and posterior roots of the upper three cervical nerves and division of some of the muscles concerned in the spasm. The results in his hands, particularly after perfecting the technic of operation, have been highly satisfactory. In reporting the end-results of a rather large series of cases, 32 in all, Dr. Finney noted that the maximum improvement was not reached in a number of patients for some months after operation. As to the difficulty and risk of intrameningeal root section compared to the Finney operation, there is probably very little difference. In a thick-necked person—and these patients often have hypertrophy of the muscles—the procedure is decidedly of a major type if an adequate operation is done. In less muscular individuals we have divided the cervical roots under local anesthesia. So far as we know there is no disability of the cervical spine following laminectomy, and no form of rigid fixation is necessary after the operation. The case reported is an interesting physiological experiment which has been attended by highly satisfactory clinical results, but the well known tendency of the disease to recur or spread after all forms of operation, leads to caution in making claims for the superiority of any surgical procedure.

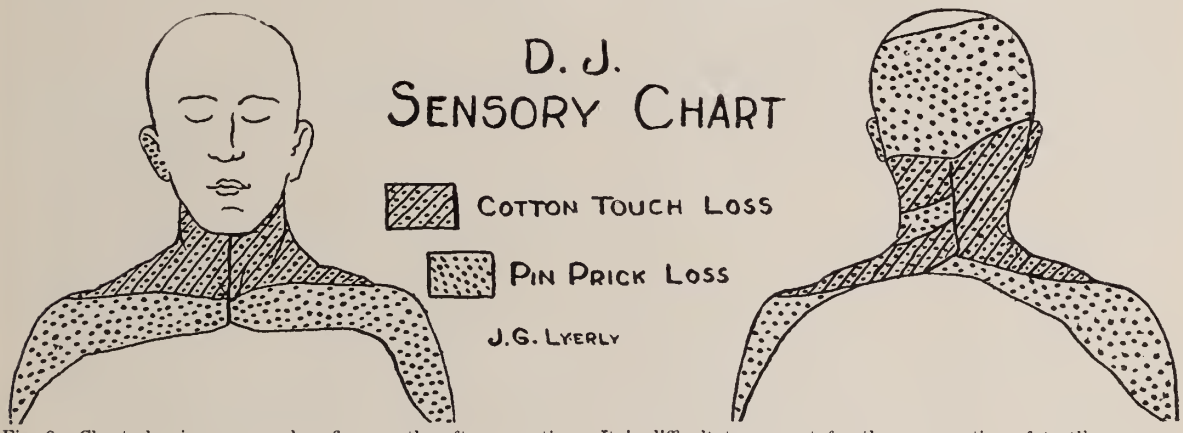


Fig. 2.—Chart showing sensory loss five months after operation. It is difficult to account for the preservation of tactile sensation in the small area on the left posterior surface of the neck as indicated in the chart.

REFERENCES

McKenzie, K. G.: Intrameningeal Division of Spinal Accessory and Roots of Upper Cervical Nerves for Treatment of Spasmodic Torticollis. *Surg. Gynec. & Obs.*, 39:5-10 July, 1924.

Finney, J. M. T., and Hughson, W.: Spasmodic Torticollis. *Ann. Surg.*, 81:255-269, January, 1925.

Taylor, A. S.: Operative Therapeusis (Johnson). Vol. 1, page 535, and personal communication.

Sherrington, C. S.: The Integrative Action of the Nervous System. Yale University Press, New Haven, 1906.

Professional Building.

A REVIEW OF VARIOUS METHODS PROPOSED FOR THE TREATMENT OF MERCURIC CHLORIDE POISONING.*

By CHAS. C. HASKELL, M. D., Richmond, Va.
Professor of Physiology and Pharmacology, Medical College of Virginia.

In the treatment of poisoning following the oral administration of mercuric chloride, efforts are usually directed toward detoxicating the mercury remaining in the alimentary tract and also that which has gained entrance into

*Read at the fifty-seventh annual meeting of the Medical Society of Virginia, in Norfolk, October 12-15, 1926.

the circulation. In the present discussion, however, the various therapeutic procedures which have been suggested in this form of poisoning will be placed in one of the two groups, created by the supposed efficacy of the measure against the poison either *before* or *after* absorption.

When a patient is seen soon after the ingestion of a toxic dose of mercuric chloride, the value of gastric lavage is too generally acknowledged to necessitate any extended discussion. The question arises, however, whether it is possible to increase the effectiveness of lavage by the use of a chemical antidote; or, because of the existence of some contraindication to lavage, whether any of the proposed antidotes is of value in the absence of this procedure?

It is difficult or impossible to obtain positive information as to the value of an antidote for mercuric chloride by clinical observation. In the first place, it is not known what amount of mercuric chloride will invariably prove fatal when given orally to an adult human being. The presence of food in the stomach, unusual delay in the discharge of the gastric contents into the intestine, heightened susceptibility to the irritant action of the drug in the stomach, leading to prompt emesis, that indefinite condition designated high individual resistance,—the presence of one or more of these factors may bring about the recovery of a given patient after a dose of the poison which would rapidly result in the death of others. It has been assumed that a single bichloride of mercury tablet of 7.3 grains will invariably lead to the death of man in the absence of treatment, but a case has recently come under my observation where many times this amount was taken and recovery occurred, although more than 24 hours elapsed before the institution of any therapeutic measures.

In the second place, the clinician never has such implicit confidence in the antidote that he employs it to the exclusion of all other treatment. In addition to the fact that the patient may have a high resistance from the presence of the factors previously mentioned, it is seldom that gastric lavage is not employed, generally along with other measures of less clearly demonstrated worth. If, now, an antidote is included among the latter and the patient survives, are we justified in attributing this happy outcome solely to the antidote?

In animal experiments, the stomach may be emptied by preliminary starvation; emesis may be prevented by the administration of morphine; and, finally, the antidote is used alone, thus eliminating the disturbing influence of other therapeutic procedures. Because of these considerations, in the present discussion, the value of any of the proposed antidotes will be inferred from the results of animal experiments rather than from the reports of clinical trial.

Of the various antidotes that have been proposed for neutralizing mercuric chloride in the stomach or intestines, some form of albumin is the most popular. Experiments on rabbits that have been carried out by Fantus have shown, however, that milk, eggs, or serum albumin are practically valueless, even when mixed with the poison, prior to administration. Hesse has recently furnished additional evidence that albumin is incapable of influencing the course of the poisoning by mercuric chloride. The explanations offered for this failure of the antidote are either that solution of the so-called albuminate of mercury occurs readily in an excess of albumin or in an excess of certain neutral salts.

Hall suggested the use of a solution of quinine hydrochloride, hydrochloric acid, and potassium iodide, because of his observation that this mixture was capable of precipitating mercuric chloride. Fantus and Barbour have proved, however, that Hall's antidote is of no avail, either when mixed with the poison before oral administration or when injected into the circulation.

A mixture of six parts of sodium phosphite and four parts of potassium acetate was proposed as an antidote by Carter, the supposed reason for its efficacy being ascribed to the fact that the phosphite reduces mercuric chloride to calomel and the potassium acetate acts as a diuretic. From experiments carried out on rabbits, Fantus concludes that Carter's antidote is valuable; but the conditions existing in these experiments were absolutely unlike those encountered clinically. The solution of mercuric chloride was introduced into the stomach of the rabbits through a tube, to be followed immediately by the antidote. Later, in association with Hyatt, Fantus carried out further experiments. In these, five minutes

were allowed to elapse between the administration of the poison and that of the antidote—a lapse of time entirely too short to allow any significance to be attached to the results. It is conceivable that Carter's antidote may be of value in poisoning by the oral administration of mercuric chloride, but that such is actually true under the conditions that will be encountered clinically has never been proved.

Fantus himself suggested the use of a mixture of sodium hypophosphite and hydrogen peroxide, concluding that this was second only to Carter's antidote in efficacy. However, the same criticism applied here as in the case of his experiments with Carter's antidote; the lapse of time between administration of poison and antidote was entirely too short.

Theoretically, effective detoxication of the mercury could be accomplished by its transformation into a sulphide. Sabbatini attempted to bring this about by the use of hydrogen sulphide, but his results were disappointing. Later, Peyron, and also Kunkel, experimented with sulphides as antidotes to mercuric chloride, but met with no success. More recently, Hayward and Allen proposed the use of calcium sulphide, and, in 1917, Wilms published a paper, lauding the effects of this substance in detoxicating mercuric chloride. Actual experimentation has shown, however, that calcium sulphide must be administered within five minutes of the poison in order to exert any influence; and the claim has been made that if the lapse of time is greater than this, the supposed antidote is, in reality, definitely harmful.

Among the most recent additions to the list of antidotes for mercury is sodium thiosulphate. Ravaut appears to have been the first to suggest the use of this antidote, but attention has been directed to it in this country especially by the papers of McBride and Dennie. According to McBride and Dennie, sodium thiosulphate constitutes a valuable antidote for mercury and other metals, whether these are in the gastro-intestinal tract or have been absorbed into the blood stream.

Theoretically, sodium thiosulphate should be less efficacious even than calcium sulphide when administered with the object of precipitating the mercury in the stomach or intestines, since thiosulphate ionizes less rapidly than does calcium sulphide. Experiments carried out in our laboratory on dogs seem to indicate quite clearly that if as much as fifteen minutes intervene between the administration of the mercuric chloride solution orally and the administration of the sodium thiosulphate, absolutely no antidotal effect is observed, the proportion of animals dying after thiosulphate medication being as high as in the untreated controls.

Actuated by the belief that the local action of the mercury in the gastro-intestinal tract is largely or entirely responsible for the toxic manifestations and the fatal outcome, Ziegler suggests the administration of mucilage of acacia in the treatment of mercuric chloride poisoning. From similar reasoning, Landau, Marjanko, and Ferkin recommend a mixture of bismuth subnitrate and bismuth subcarbonate. In dogs, however, neither mucilage of acacia nor enormous doses of bismuth subcarbonate have prevented death, although given within a few minutes after barely the M.L.D. of mercuric chloride.

Within the past year, Hesse reported the results of experiments on mercury antidotes. He met with no success with any, save sodium hyposulphite. This substance, he says, should be distinguished from sodium thiosulphate, the formula for the hyposulphite being $Na_2S_2O_4$: while that of thiosulphate is $Na_2S_2O_3$. One gets the impression that Hesse's work was carefully carried out and adequately controlled: he states, however, that dogs given hyposulphite after mercuric chloride invariably vomit: consequently, he drew his conclusions as to the efficacy of the antidote from tests carried out on rabbits. For various reasons, rabbits are less satisfactory than dogs, and it is not desirable that attempts should be made to confirm Hesse's observations on these latter animals. So far, it has been impossible for us to secure a supply of the hyposulphite for this purpose.

As is well known, salts of magnesium are poorly absorbed from the lumen of the intestine. Sulphates of various cations, likewise, are poorly absorbed. It is to be expected that a combination of the poorly absorbable magnesium with the sulphate radicle would possess this property of unabsorbability to a high degree—a supposition that is confirmed by actual trial,—and upon its unabsorbability depends the cathartic action of magnesium sulphate. The salt does not diffuse through the walls of the intestine to any appreciable extent, giving

rise to an increased osmotic tension and attracting water into the lumen of the gut. Having such an action, it might be possible that the flow of water from the tissues into the intestine might interfere with the absorption of other substances than the magnesium sulphate. Early experiments carried out in our laboratory appeared to indicate that the administration of large amounts of a 25 per cent solution of magnesium sulphate as long as 30 minutes after a fatal dose of mercuric chloride was of definite benefit; further investigation, however, has failed to confirm this.

Turning next to the possibility of combating the poison after it has passed into the blood stream: In 1917, Sansum showed that after a barely fatal dose of mercuric chloride was injected intravenously, most copious diuresis, induced by the intravascular injection of hypertonic dextrose solution, dextrose in Ringer's solution, or of Fischer's solution, failed to avert a fatal outcome, although the treatment was instituted promptly after the injection of the poison.

MacNider has observed that the intravenous injection of a hypertonic solution of sodium carbonate or bicarbonate appears to protect the kidney against the toxic action of mercury or uranium. Many clinicians have been so impressed by this report that the alkali treatment of mercury poisoning has gained quite a vogue. In our laboratory, however, it has been shown that the intravenous injection of 5 per cent bicarbonate of soda solution has not the least influence on the course of the poisoning following the intravenous injection of a large dose of mercuric chloride, as judged by the steady rise in the rest nitrogen of the blood and the eventual demise of the dog. Moreover, in numerous reports, attention has been directed to the fact that the careless injection of hypertonic soda solutions intravenously is a procedure accompanied by much danger to the patient.

As was mentioned previously, both calcium sulphide and sodium thiosulphate have been recommended for the purpose of detoxicating the mercury that has been absorbed. The intravenous injection of calcium sulphide is not only lacking in efficacy but is so dangerous that it should never be resorted to. Sodium thiosulphate, on the other hand, is well tolerated when injected in doses as large as a gram per kilogram body weight. Unfortunately, sodium thiosulphate is entirely lacking in any ability to neutralize the mercury that has been absorbed, even though the supposed antidote is injected as early as five minutes after the entrance of the poison into the circulation.

In 1917, Burmeister, impressed by the fact that mercury could be demonstrated in the blood for a considerable time after its administration, attempted to save animals poisoned by large doses of mercury through extensive bleeding and subsequent injection of washed red corpuscles. Although all of his treated animals succumbed, he believed that the intensity of the renal damage was lessened by this procedure. The paper of Robertson, in which excellent results were reported following the employment of a method designated "exsanguination-transfusion" in the treatment of various forms of intoxication, encouraged us to apply this method in the attempt to save dogs after a fatal intravenous dose of mercuric chloride. Within a few minutes after the injection of the mercuric chloride solution, the animals were bled from the femoral artery, small amounts of blood being withdrawn at a time and slightly larger quantities of matched blood from another dog being injected into the femoral vein. This was continued until an amount of blood estimated as equal to the animal's total blood volume was removed and a slightly larger amount of blood from the donor introduced into the vein. Without exception, the procedure resulted in an earlier death on the part of the treated animals.

It must be confessed that the spirit of optimism does not permeate this review. The various procedures that have been proposed for the therapy of mercuric chloride poisoning, when subjected to critical test, are, with scarcely an exception, found wanting. One conclusion of a constructive nature may be drawn from the facts that have been presented; the safest way to prevent death from mercuric chloride poisoning is to prevent absorption; and when the poison has been administered orally, this may be best accomplished by prompt and thorough gastric lavage. In the present state of our knowledge, antidotes for mercuric chloride must be looked upon as better fitted for affording mental solace to physician and patients rather than as being capable of accomplishing a detoxication of the poison.

DISCUSSION.

DR. J. MORRISON HUTCHESON, *Richmond:*—In beginning this discussion, I wish to express my firm belief in the value of this kind of paper. In medicine

we are prone to arrive at hasty conclusions based on recent favorable experiences and to share in the enthusiasm of others who themselves have drawn broad deductions from rather shaky premises. This tendency is probably largely responsible for the rapidly changing "latest treatments" that we have for so many of our diseases, and unless we stop now and then and think out things and get our bearings it is hard to tell whether we are going forward or back.

My experience with mercury poisoning has been largely in the hospital division of the Medical College of Virginia, where in the last ten years there have been twenty-nine cases treated. In the past two years there have been seven cases, with two deaths apparently from uremia. A review of these seven cases, which I have recently made, gives practically nothing from which one might draw a conclusion as to the value of treatment. It is true that our observations have been, in the main, extremely superficial. The highest amount of bichlorid taken was 22½ grains, but this patient vomited soon afterward and later recovered. Gastric lavage was done in all cases with variable frequency, and kept up for a variable length of time, usually until the patient appeared to be out of danger. A variety of other treatments were tried—in most instances abundant fluid, mouth wash, heat, and Epsom salts. One fatal case was treated with sodium thiosulphate, another by exsanguination transfusion. The two fatal cases came to the hospital several days after the poison was taken, but in most instances the treatment was begun within a few hours. I believe in prompt, frequent and long continued gastric lavage. Gatewood and Byfield, of the Cook County Hospital, reported finding the poison in the gastric washings up to the eleventh day. The lavage should be kept up until the mercury has disappeared.

HEART SOUNDS AND THEIR INTERPRETATION.*

By GARNETT NELSON, M. D., Richmond, Va.
From the Department of Medicine, McGuire Clinic.

A little over a hundred years ago the distinguished Frenchman, Laennec, reported that he was using a new instrument, a stethoscope, and described with brilliant accuracy the sounds that he heard when he studied the movements of the heart in health and disease. Since the time of Laennec numerous books and articles have been written which were devoted more or less entirely to a discussion of the heart sounds. These discussions have been very elaborate and complete, so much so that the author of this paper wishes to disclaim in the beginning any attempt at adding to them in any way. My excuse for writing this paper lies in the feeling that our understanding of the meaning of things already written is a personal matter, and that when we attempt to interpret our stethoscopic findings in the light of the writings of others we immediately open up a field wherein opinions vary widely.

Another excuse for presenting this paper is the fact that the death rate from heart disease is steadily increasing. Judging from the investigations of the Metropolitan Life Insurance Co. in its 15,000,000 industrial policyholders, there are constantly well in advance of 2,000,000 men, women and children with organic heart disease in this country. Of these 2,000,000, two hundred thousand die of their heart disease annually, which gives us as a fairly accurate estimate the rather startling statement that the average life of an individual with organic heart disease is ten years.

An ideal state of affairs would be for every one of us who listens to any one heart to hear exactly the same sounds and to read into these sounds exactly the same meaning. As long as we are human beings, this will, of course, be quite impossible, but the oftener and the more conscientiously we attempt to establish uniform methods of examination, and uniform standards of interpretation, the closer we can come to forming a unanimous opinion as a necessary corollary to our examinations.

The media through which these sounds must pass, particularly endocardial sounds, namely, the heart muscle, the pericardium, the lung and its membranes, the muscles and fatty tissues of varying thickness, the bell, rubber tubing and ear pieces of the stethoscope, and, finally, the difference in the acuteness of the sense of hearing of different individuals, must inevitably lead to some variation in what is actually heard even when we do our best. Still, the expression "when doctors differ," used in a sort of jeering fashion, reflects discredit on us that we deserve more frequently than we should. We should more often collect the same facts, and the collected facts should more often make difference impossible.

It must not be understood that I am laying too much stress on the value of the heart sounds in our final summary of all the findings, nor that I even mean to say that any sound heard during the cardiac cycle can always be used to make a complete diagnosis of cardiac pathology. On the contrary, it should be stated very positively that, though heart sounds alone may generally be used to inform us as to the presence of heart disease, they are practically never alone and by themselves an accurate measure of what the disease really means.

It seems to me the mistake that is most commonly made in examining the heart is that

*Read at the fifty-seventh annual meeting of the Medical Society of Virginia, in Norfolk, October 12-15, 1926.

enough time is not allowed. We should be more deliberate, and should study attentively what we hear. We should consciously break sound up into its attributes, pitch, duration, quality and intensity, and study each attribute separately. It should not be necessary to say that the heart must never be examined at all until all clothing has been removed, and I would not mention this if I had not recently seen a doctor place his ear against the shining bosom of a stiff shirt and cheerfully pat his patient on the back with the comforting assurance that his heart was all right. It is not easy to understand the weird, uncanny psychosis that allows an authoritative expression of opinion on which the working capacity, or even the life, of an individual may depend, when one cannot possibly have gotten enough data to form any intelligent opinion whatsoever.

And now one very important question comes to mind, a question not so easily answered as we might wish, namely, can we always avoid confusion and always agree? I mean even when we have studied the heart properly. The answer has to be that we cannot, and this is particularly true in regard to one of the most common, and most easily heard of all abnormal heart sounds, that is the systolic apical murmur. What is the ordinary clinician to do when Richard Cabot, working in the Massachusetts General Hospital, says, when speaking of the so-called mitral regurgitant murmur, "Such murmurs are no evidence of disease," and, again, "Mitral regurgitation should never be the only or the primary diagnosis made"; while Paul D. White, working also in the Massachusetts General Hospital, takes issue with what he calls dogmatic pronouncements, and insists that there exists as a clinical entity, especially in children, a pure mitral regurgitation, with a pure systolic apical murmur. The two men are eminent students and teachers, clearly anxious to be correct, and to make correct statements, and yet they contradict each other flatly. I must say that I greeted Dr. White's article in the *American Heart Journal*, June 1926, with a good deal of satisfaction. I had already presumed to differ with Dr. Cabot in a previous paper, and expressed the view that it was all right to caution us against paying too much attention to the systolic apical murmur, accompanied by absolutely no other evidence of disease, but it seemed to me that he had made strictures somewhat more radical than perhaps he intended. We undoubtedly, at least occasionally, see patients with a systolic apical murmur in whom the subsequent course of events, perhaps after a number of years, justifies the original diagnosis of a pure mitral regurgitation.

To return to a further discussion of the reasons why abnormal heart sounds are overlooked, and a few remarks on methods of examination. The stethoscope itself is of great importance, and we should be careful to see to it that we have a good instrument that fits our ears snugly, but comfortably. The bell of the stethoscope must be pressed firmly against the patient's body. Merely laying it gently on the chest wall is not sufficient. Murmurs that are quite loud and easily heard if the stethoscope is definitely pushed may be entirely inaudible otherwise. This is especially true of the presystolic mitral stenotic murmur. Again, in moving the stethoscope from one part of the precordium to another, we should never move it the full width of the bell, but should include in each new position a small part just previously covered, so as to be sure to examine the whole of that portion of the chest in which murmurs are ever heard. This precaution also is especially necessary in searching for the presystolic mitral murmur. The acoustic area, so to speak, of this murmur is frequently so small that, even when it is quite loud, it becomes no longer audible if we move the stethoscope a surprisingly trifling distance. We hear it in one place and think that surely we can hear it at a nearby point, but we cannot. We must go back to almost exactly the point at which it was first heard. This means, as a matter of course, that if we had accidentally, or from lack of painstaking thoroughness, missed the small area of audibility, we would not have heard it at all, and would have perhaps declared a heart free from disease when definite stenosis was present.

In order to still more carefully guard against the possibility of not hearing or not interpreting properly abnormal sounds, we must in our examinations pay careful attention to the effect of posture, respiration and exertion, and, if opportunity offers, must never be satisfied with one examination. This last precaution is imperative on account of the fact that definite murmurs are frequently transient or very variable in intensity. There does not seem to be any satisfactory explanation of this variability, but we see it so often that we must not

forget it nor, in my judgment, attempt to explain it. The simple fact in respect to this variability is emphasized by illustration. We can take a patient lying quietly on the back in a hospital and make daily examinations of the heart, taking great pains to reproduce exactly the same conditions each day, and one day hear heart murmurs far more distinctly than the preceding or the following day. This is particularly true of the double mitral, and the element that is most inconstant is the presystolic.

In regard to posture, this does not make a great deal of difference as a rule, except in our studies of the mitral valve, but is of great importance here. Very, very frequently the systolic apical murmur is better heard with the patient lying down, whereas the presystolic murmur is better heard or heard only with the patient erect. This is a mistake very easily made. It happens so often that when we for any reason listen to a patient's heart sounds, the patient is lying in bed either in the home or in a hospital, perhaps complaining of some symptoms that attract our attention to the circulation, and perhaps merely examined as a part of a routine physical. It is a very easy thing to listen, even fairly carefully, and forget that we have examined the patient in one posture only. We must never say that organic valvular disease is not present unless, if circumstances permit, we have raised the patient to a sitting posture. I have never seen any satisfactory explanation of this disappearance and reappearance of the presystolic murmur, and can only cite the fact as a reason for caution. Very loud presystolic murmurs heard in the erect posture frequently become absolutely inaudible with the patient lying down.

In regard to exercise, the usual effect of a proper response of the heart muscle to exertion is to intensify all murmurs, or render murmurs audible which were not so at rest. With the ambulant office patient some mild form of setting up exercises can be easily employed, and even with the bed-ridden patient we can frequently make use of resistance movements, or some other mild exertion. It is a matter of serious omen if a murmur easily heard at rest becomes more faint or disappears after exertion.

In regard to the effect of respiration, this is to me of value only as follows: The position of the lung during inspiration and expiration affects the intensity of a heart sound. This is merely a matter of the amount of tissue through which the sound has to be conducted. After a deep inspiration there is lung tissue in the way that is out of the way after a forced expiration, so that organic murmurs are better heard after forced expiration; and there is also one other point gained in considering respiration while we are studying heart sounds, namely, in attempting to differentiate functional murmurs from organic we can remember that the functional murmur is usually more intense at the end of a deep inspiration. This is especially true of the cardio-respiratory murmur, which seems to be due to the impact of the heart against the lung caught between the heart and the chest wall during inspiration.

It is impossible in a paper of this length to take up all heart sounds and discuss them separately, so, in conclusion, I direct your attention to the following points:

1. The mortality from heart disease is steadily increasing.

2. A negative diagnosis as to the presence of heart disease should never be made without intensive deliberate study.

3. Mitral regurgitation is a definite clinical entity, and may at first be revealed by nothing more than a pure systolic apical murmur.

4. Mitral stenosis is of all lesions the one most commonly overlooked, which is due to the fact that it is of itself inconstant and particularly altered by

5. The effect of posture, respiration and exercise.

DISCUSSION.

DR. MANFRED CALL, *Richmond:*—The most important facts in consideration of heart sounds I do not remember to have heard discussed at all. It is really more than an interpretation of murmurs, which latter may or may not be of importance. The point I wish to make is this—that to me far more information can be derived from a study of the individual valve sounds, not murmurs, than from a study of the murmur itself. For instance, a mitral lesion, whether stenosis or regurgitation, should have practically invariably an intensification of the pulmonary second due to an increased pressure in the pulmonary circulation. In aortic regurgitation, just in proportion to the extent of the lesion do we get a diminution of the aortic second sound. A close auscultatory observation of the character of the muscular element of the first sound as heard at the apex offers perhaps the best criterion of the efficiency of the heart muscle. It is to this, rather than to the interpretation of the murmurs, that I would call the attention of the Society.

DR. J. C. FLIPPIN, *University:*—I wish to commend Dr. Nelson for the emphasis he has placed on physical diagnosis. With the introduction, from time to

time, of newly devised aids to diagnosis, there is a tendency to neglect the simple methods of investigation. While not wishing in any way to decry the use of modern instruments and methods, without the aid of which the exceptional case can not be thoroughly understood, it still remains true that a careful physical examination will reveal all that can be determined by any method in a large percentage of cases. A careful and thorough bed-side examination with the aid of the stethoscope and a few other simple instruments continues to be and will doubtless long remain the backbone of diagnosis.

Experience in examining and observing large numbers of men during the recent war undoubtedly emphasized the frequent occurrence of systolic murmurs, and the fact that this murmur is in most cases without significance. I can not help but feel, however, that Dr. Cabot and certain prominent English clinicians have become a bit extreme in their views on the diagnosis of mitral insufficiency.

Dr. Nelson, (*closing the discussion*):—I want to thank Dr. Call and Dr. Flippin for discussing my paper and thank them both for what they said. Dr. Call has added to what I had in the paper. As I stated in the beginning, it is impossible to take up in a paper of that length all the sounds of the heart. The purpose of my paper has been emphasized by Dr. Flippin. I know myself that when I am hurried, on days when I am busy, I have a tendency not to employ what I know. I read that paper more to emphasize to my own mind the need for caution, the need for deliberate study of the heart. You can not listen to a heart for a few minutes and make any pronouncement about it. It has to be careful, deliberate study, just as a child studies its lessons for school, and I emphasized in the paper the things I find myself sometimes inclined to overlook.

PURPURA OF THE URINARY TRACT.*

By JOSEPH F. GEISINGER, M. D., Richmond, Va.

Purpuric phenomena within the urinary apparatus have received but scant and inconstant attention in the consideration of the important symptom of hematuria. It is not unlikely, however, that they occur more frequently than statistics would indicate, and that they underlie some of the puzzling cases in which even the most vigilant urologist has been unable at times to disclose either the source or the cause of bloody urine.

Hematuria associated with purpuric or erythematous manifestations elsewhere in the body, and presumably of the same etiologic connections, is, of course, anything but rare. Records of many such cases have come from the medical clinics and the recognized texts contain comprehensive discussions of the supposed pathologic physiology which permits the contents of the blood vessels to escape into the tissues. In these cases, however, the hematuria, if not actually insignificant by comparison with the more clearly defined surface purpura present at the same time, is so obviously due to a general vascular or hematopoietic disturbance that it receives no independent consideration and rarely comes to the urologist for investigation.

On the other hand, hematuria due to a purpuric condition confined (and therefore concealed) within the urinary tract has been recorded but rarely,—and it is this type to which the writer directs attention, with the addition of one case under his own observation. In this group there is nothing in the general condition or appearance of the patient to suggest the actual lesion. The case goes not to the medical clinic, as a rule, but to the urologist, upon the presumption that the bleeding is due to one of the causes commonly present in such a situation,—calculus, tuberculosis, neoplasm, infection. The urologist conducts an exhaustive study and finds none of these conditions. The purpuric picture may be intensely present in the bladder and offer a ready explanation. On the other hand, the bladder may show no involvement, but blood may be seen coming from kidneys, into which the urologist cannot look; and in the absence of any other explanation the case may be recorded as one of essential or idiopathic hematuria. Finally, the bleeding may have stopped entirely and exist only in the history, and the bladder, under the eye of the urologist, will give no clue to the fact that but recently it was itself the seat of a hundred small hemorrhages. The case will then go into the baffling group of those in which not only the etiology but also the site of the bleeding is undisclosed.

The most elaborate consideration of the subject, with which the writer is familiar, is that by Stevens and Peters in 1919 in connection with the exhibition of thirty-seven cases observed among the troops in France during the late war. The remainder of the literature consists of an occasional fragmentary report, usually from some foreign source.

In the cases presented by Stevens and Peters, who considered them to represent a new disease, the onset was acute, with irregular and insignificant prodromata. The fully developed clinical picture showed pyrexia, marked prostration and general malaise, headache, pains in the legs and back, gross hematuria, dysuria, frequency of urination, cylinduria, reduction of phenolsulphonephthalein output. The order of appearance of the symptoms varied, as

*Read before the fifty-seventh annual meeting of the Medical Society of Virginia, at Norfolk, Va., October 12-15, 1926.

did their relative severity. The disease tended to run a prolonged sub-acute or chronic course, with occasional acute relapses. The lumbar pain was sometimes as severe as true renal colic and was presumed to be due to the passage of clots. Casts were present in the urine of practically all cases and the dye output registered a definite depression of function; the common signs and symptoms of nephritis, however, were noticeably absent. Uremic manifestations were lacking and edema and dyspnea were rare. The blood pressure was never elevated above normal limits. The blood itself presented nothing of any significance. No leucocytosis occurred. Late in the disease a slight secondary anemia was found. No observations were recorded with reference to coagulation time or the platelet count,—a rather important omission. The cystoscopic

Normal trigone and adjacent area of bladder wall.

picture was always striking and was essential to the diagnosis,—small hemorrhages into the mucosa, numbering from two to over a hundred, and ranging in size from petechial spots to 1 cm. in diameter. When gross hematuria existed at the time of cystoscopy, blood was clearly seen to come from both ureteral orifices. At no time was any blood seen oozing from the hemorrhagic mucosa. Subsequent cystoscopies showed a tendency of the lesions to clear up with great rapidity. Microscopic examination of small bits of tissue removed through the cystoscope exhibited submucous hemorrhages unaccompanied by any of the signs of inflammation. Bacteriologic examination of blood and urine proved negative. Attempts to determine the etiology of the condition or to identify it with any known disease were unsuccessful. There was no direct evidence that its incidence was dependent upon the special conditions occurring in war, and it seemed quite possible to the authors that cases of the disease might occur in civil life. Finally, they declare:

"The evidence that we are dealing with a clinical entity is merely circumstantial, but the appearance in a considerable number of cases of a distinctive pathologic and clinical syndrome hitherto unreported is hardly conceivable as a fortuitous series of coincidences. The bladder hemorrhages cannot at present be distinguished from any other purpuric lesions; but a purpura of such frequent occurrence, which is apparently limited, in at least a large proportion of cases, to the urinary tract, is sufficiently extraordinary to command attention."

Report of a Case.

The patient, a white woman, now 32 years of age and the mother of seven children, came under observation first in 1921, and has reported for advice or treatment at irregular intervals since that time.

The collateral history presents nothing of any particular significance with the exception of a tendency to excessive nose bleeding in her husband and all of her children, but never in herself. At no time has she ever had a suggestion of purpura or erythema on her skin surfaces, and she has never observed any prolongation of bleeding after slight injuries, but rather the contrary. She has spent her entire life in Richmond and has never been anywhere near the tropics.

Frequent child-bearing, exacting household duties, and the urinary disturbance, to be detailed subsequently, have kept her in a state of chronic ill health. Her appetite and digestion have continued good and her bowels behave normally; there has been no blood from the rectum. Menstruation is regular and painless, but very profuse and sometimes lasts fifteen days. In recent years there has been considerable leucorrheal discharge. About eighteen years ago she had a suspension of her uterus, which was supposed to be disturbing her bladder by pressure; at the same time her appendix, said to be adherent to her right ovary, was removed. This operation gave her considerable relief until eight years ago, when her bladder disturbance recurred. Five years ago a perineal tear was repaired.

It was shortly after this operation that the patient first came into the hands of the writer, on account of bloody urine. As intimated above, she had suffered bladder distress, consisting of burning and frequency, for many years, but this was her first spell of hematuria, and was so profuse that she was alarmed and sought explanation immediately. This was in December, 1921. A cystoscopic investigation was made the next day and disclosed an astonishing picture. With the exception of the anterior half of the trigone, the bladder mucosa throughout was studded with ecchymotic spots varying in size from a pin-head to a dime. Such small uninvolved areas as were visible between these spots did not appear to be inflamed. No actual bleeding was present at the time and the urine which had previously been full of blood was now quite clear. Both ureters were catheterized and the separated urines were entirely normal. A differential function

test was done, but, owing to leakage alongside the catheters, was inconclusive so far as the kidneys individually were concerned; the total dye output, however, was somewhat above normal. Stains for tubercle bacilli were negative.

Following this manipulation the patient had some further bleeding, and three days later suffered severe pain in her lower left abdomen, from which she suddenly obtained relief coincidently with the passage of milky urine of such character that she concluded an "abscess had ruptured." Examination of this specimen showed the cloud to be due, not to pus, as presumed, but "to presence of chyle, probably due to rupture of lymph vessels into bladder." (Dr. E. G. Hopkins, pathologist).

and a fever of from 101° to 103°. There were no other symptoms. Her bladder had been quiescent for sometime; there had been no bleeding and there was none in this spell. In her previous disturbances there had been no fever and her white blood count had been normal; now there was a definite leucocytosis. The urinalysis, however, was practically negative for infection, though it showed acetone, diacetic acid, mucus, and a trace of albumin. She was exquisitely sensitive over her left kidney, which was palpable but not enlarged. Upon the presumption that she had a left renal infection, with a blockage of her ureter, cystoscopic investigation was made. The base of the bladder was somewhat edematous, but otherwise negative. The expected obstruction

Trigone and adjacent bladder wall in case here reported. Note almost innumerable hemorrhagic areas. The same picture was present throughout the entire remainder of the bladder.

The patient was lost to sight for a little more than a year, when she returned stating that she had passed no more blood or chyle, but had continued to suffer with burning, frequent urinat on and pain along the course of both ureters, especially on the left side. Urinalysis at this time was negative, but, in view of her symptoms, a cystoscopic investigation was again made. The bladder exhibited slight congestion of the trigone, but was otherwise negative, giving no hint of its previous condition. Specimens from the kidneys were entirely negative microscopically and culturally.

After this, the patient was not again seen until March, 1925, when she suffered an attack of violent pain in her left renal area, accompanied by chills

in the left ureter was not present; a large catheter was passed readily. There was no retention in the pelvis and the urine was quite clear. An X-ray plate was negative for shadows; a pyelogram showed slight dilatation of the pelvis, which was otherwise entirely normal. The function of this kidney, as indicated by the dye test, was definitely above normal. Artificial distention of the pelvis classically reproduced the patient's pain. The catheter was retained for about twenty-four hours, during which period the urine became quite bloody; it was impossible to estimate how much of this bleeding was due to catheter traumatism. The fever and pain promptly subsided and the patient left the hospital in two days greatly improved.

One year later she again returned. At intervals she had continued to have burning, frequent urination, with occasional attacks of pain in her left renal area, but without bleeding until the present spell. This spell was ushered in with fever which lasted nearly a week. Then, on March 8, 1926, after a day of great bladder disturbance, she began to strain and passed a great deal of blood along with chunks of "flesh"; some of the latter were an inch long and did not look like clots. The bleeding continued all night, with much pain in the left side, but no fever. On the following day she reported for advice and was immediately cystoscoped. The bladder picture was now a precise duplication of what it had been nearly five years previously. The mucosa was universally splashed with ecchymoses, with the exception of the anterior half of the trigone. There were many hundreds of these spots, with narrow uninvolved areas between. No active bleeding was visible anywhere; the urine showed a few pus cells, but no blood. After twenty-four hours the bladder was again inspected. With the exception of a few of the larger splotches, the ecchymoses had nearly all disappeared, leaving an edematous, congested appearance of the mucosa. The bladder urine contained a considerable amount of pus, but no blood; the left kidney urine was negative for pus. In fifteen minutes 20% of phenolsulphonephthalein was eliminated from the left kidney and 25% from the right, the normal being 15%.

Following this examination, the patient continued uncomfortable, and again had bloody urine with a foul odor and also some fleshy shreds Six days later (Maarch 16, 1926), the bladder, on cystoscopic examination, gave no suggestion whatever of its previous condition, but appeared to be the seat of a low-grade cystitis; the urine now contained a small amount of blood and pus. One month later this urine was absolutely negative; the patient herself was definitely better, but still had spells of burning urination and much aching in her left abdomen and back.

In the five or six months that have elapsed since this date, the condition of the patient has not materially altered. Bladder disturbance occurs at intervals, and pain in her left side is often quite bad. More and more has she become impressed with an association between her menstruation and her exacerbations of this pain; her periods are profuse and last a week or more; the discharge is often offensive; her side begins to ache a week before the flow starts and continues to ache until it stops. Then, usually, though not always, she has some relief until menstruation again approaches.

A considerable mass of laboratory and other data has been assembled in connection with her condition. Her blood picture presents none of the characteristics of a true purpura hemorrhagica. Her platelet count is 200,000. Not only was there no prolongation of her bleeding time, but after a deep stick with a three-cornered needle she would not bleed at all without pressure. After twelve hours her blood clot contracted completely, squeezing out all of its serum. In the middle of one of her spells of hematuria her red blood count was 4,776,000 cells, with hemaglobin of 75%. The white cells were 9,600, polys 75%; small lymphocytes 19%; large lymphocytes 6%. The smear showed some poikilocytosis and a considerable degree of anisocytosis. The stool was negative for blood, parasites, or ova. The dye output from the kidneys has been normal. At the same time, blood chemistry showed urea nitrogen 20 mg.; creatinin 1.3 mg., and sugar 88 mg. In the course of one of the cystoscopic examinations a small bit of tissue was removed with rongeur forceps from the ecchymotic bladder wall. On microscopic examination (Dr. Charles Phillips), this was found to exhibit "a chronic inflammatory reaction under a poorly defined and edematous mucous membrane. There is considerable hemorrhage throughout; a great many polynuclear and eosinophilic leucocytes. There is an extensive round cell infiltration and fibrosis. There are a few blood vessels present, but the specimen is not very vascular. There is a definite suggestion of tuberculosis, but only a suggestion, in the general arrangement of the chronic inflammatory reaction." The urine has been stained frequently for tubercle bacilli, but none have been found; guinea pig inoculation has also been negative.

A general physical examination by a competent internist disclosed nothing of any striking significance in connection with the possbility that the urinary purpura in this case might be symptomatic of pathology elsewhere in the body. The outstanding finding here was a definite focus of infection in the tonsils, smears from which showed pus, staphylococci, and Vincent's angina. The lungs were essentially negative. The circulation seemed good; a soft systolic murmur was heard over the precordium, more distinct in the pulmonic area; blood pressure, 130 systolic; 86 diastolic. Reflexes were normal. The eye grounds showed nothing unusual.

On pelvic examination the uterus was found anterior, with the fundus enlarged, boggy, and very sensitive to manipulation. No gross masses were palpable in the adnexal regions. The cervix was lacerated, hypertrophied, chronically inflamed and eroded. In view of these pelvic findings, the fact that the patient has borne seven children, the increased burden of prolonged profuse menstruation, and the apparent connection between the pelvic physiology and the urinary pathology, there would seem to be good reason to break the cycle, if one exists, and at the same time remove an organ which, as the patient approaches the menopause, may, in its present condition, become a serious menace to her. As her domestic situation does not permit her at this time to enter a hospital for operation, she is being submitted to X-ray treatment tentatively. In addition, the cervix will be treated locally by diathermy and otherwise if necessary; her tonsils will be removed as soon as possible, and her urinary complications will be met according to circumstances, as in the past. The outcome lies in the future, and is, therefore, a matter of mere speculation.

It seems unquestionable that this case belongs to the supposedly rare type distinguished by purpuric manifestations limited to the urinary tract. Absence of characteristic blood findings, especially in reference to the platelet count, exclude it from the purpura hemorrhagica group. More likely it is a secondary or symptomatic purpura, the underlying factor in which is not clearly defined. This factor may be represented by the infection in the tonsils, or in the cervix uteri, or both. On the other hand, it may be expressed by a less pathological and more physiological connection between urinary bleeding and menstrual bleeding. Finally, there may be some local condition in the ultimate ramifications of the

urinary vascular tree permitting the capillary contents to pass into the tissues under certain circumstances.

In some respects the case resembles those described by Stevens and Peters, but in other respects it differs radically. At no time was any blood observed coming from the kidneys prior to catheterization; hence, it cannot be said that the kidneys were actually involved, though the persistent left renal pain would tend to indicate this. Casts were never found in the urine and the renal function, instead of being depressed, was actually accelerated. The degree of involvement of the bladder wall was much more extensive in this case. Finally, the appearance of chyluria in the course of one attack was most unusual. Non-parasitic chyluria is itself so uncommon as to invite comment and discussion. Various theories as to its etiology have been advanced; the most generally accepted presumes some obstruction to the lymphatic drainage resulting in back pressure sufficient to cause dispersion of the chyle through the vessel walls. There is no obvious obstructive element in this case. At all events, first blood and then chyle have appeared in the urine of this patient, and it is possible that both resulted from "rupture" of vessels, as indicated by the keenly observant E. G. Hopkins in his original report. The cause of the rupture itself is another matter, as yet unexplained.

The extraordinary evanescence of the visible bladder lesion is mentioned by Stevens and Peters and is strikingly illustrated in this case. This aspect of the phenomenon is extremely interesting and possibly important in the matter of diagnosis. The presence of purpura of the urinary tract can never be conclusively determined without a demonstration of the characteristic bladder picture. With a picture that vanishes so speedily it is manifestly easier to miss it than otherwise. Conceivably, therefore, it is present in the clinical field oftener than it is disclosed, and herein may possibly lie an occasional explanation for some of the hematurias of unknown origin. Furthermore, as indicated above, it is quite likely that at times the kidney, the pelvis, and the ureter, singly or in combination, may be the seat of a purpuric process without involvement of the bladder. In such an event, though blood be visible at the ureteral os when the inspection is made, its real nature is completely concealed, and since no other causes are obvious, the diagnosis of idiopathic hematuria would follow as a matter of course.

Stuart Circle Hospital.

THE RETICULO-ENDOTHELIAL SYSTEM WITH SPECIAL REFENCE TO THE LYMPHOCYTE.*

By H. E. JORDAN, Ph.D., University, Va.
Medical School, University of Virginia.

The designation reticulo-endothelial system was proposed by Aschoff and Landau (1913) as an inclusive term for widely distributed collections and free-cell derivatives of reticular connective tissue and of blood-vascular and lymph-vascular endothelium, co-operating in the function primarily of intense and frequent phagocytosis, particularly of senile blood cells, tissue debris and micro-organisms. Employed in this sense, as designating a group of cells possessing common morphologic and physiologic properties of a very special character, the term is one of great convenience, and has come to be widely adopted, especially in pathology.

The reticulo-endothelial system includes thus the Kupffer cells of the liver, the splenic monocytes ("splenocytes"), the so-called macrophages (in contrast with the polymorphonucleated special granulocytes, the "microphages"). endothelial leucocytes (phagocytes), histiocytes. adventitial cells, clasmatocytes, and the "polyblasts" of Maximow. It comprehends furthermore the sinusoidal and capillary endothelium of the spleen, bone marrow, lymph nodes, hemal nodes, liver, lungs, hypophysis cerebri and the suprarenal cortex. It includes also the reticular connective tissue of these same organs and tissues, and of the tonsils and thymus. The greater and more active portion of the reticulo-endothelial system in mammals resides in the spleen; next in bulk and activity is apparently that portion included within the red bone-marrow; that of the lymph and hemal nodes would seem to occupy normally the tertiary level. The various types of free phagocytes of this system take origin from the reticulum and endothelial cells of the included tissues, or from the lymphocyte derivatives of the constituent parent cells. Various functions more or less confidently ascribed to the spleen, including blood-cell formation and destruction, iron metabolism, antibody formation, fat metabolism, etc., are all supposed to be related to the reticulo-endothelial complex.

---

*Read before the fifty-seventh annual meeting of the Medical Society of Virginia, at Norfolk, October 12-15, 1926.

Besides its extensive phagocytic function, the reticulo-endothelial system as a whole is also intimately involved in the function of blood formation. The specific derivatives of this system in the various hemopoietic foci whose function is that of ancestors to erythrocytes and granulocytes have been designated *hemohistioblasts* by Ferrata (1914). The intermediate stage between the reticulo-endothelial tissue, or, specifically, the hemohistioblast element of the system, and the future blood cell may again be a lymphocyte-like cell, the so-called hemocytoblast. Depending upon the specific type of stimulus, the lymphocyte derivative of the endothelial or reticular tissue may differentiate either into the various types of phagocytes or into specific blood cells.

In the entire system blood-cell formation and blood-cell destruction may be coincident processes of variable degree. Moreover, the ancestral tissues of these two functionally divergent groups of cells are originally apparently identical. The difference in developmental direction and function would seem to be a matter of difference of specific stimuli impinging upon polyvalent and potentially identical cells. Moreover, in the case of either route of differentiation, phagocytic or hemopoietic, the lymphocyte constitutes an early intermediate stage in which the original polyvalency of the parent mesenchyma has been retained to a high degree.

Closely related to the phagocytic blood destructive function of the reticulo-endothelial system is that of bile-pigment production. This function is largely intrahepatic in the case of birds, intrasplenic in the case of the dog and other mammals (Aschoff, 1924). This system is concerned also in a still disputed and uncertain degree with antigen-binding and antibody-producing functions in the body's defence reactions against bacterial infections; and in general ferment production. Its participation in general metabolic functions, e. g., storage and metabolism of iron, metabolism of fats and proteins, is also more or less clearly indicated by various experiments detailed by Aschoff.

We are interested in this connection chiefly with the role of the reticulo-endothelial system in blood-formation, and especially with the relation of the lymphocyte to this process.

The limits of the system should first be clearly defined. The best criterion for this purpose is its reaction to certain dyes. When dyes like lithium carmine or trypan-blue in solution are injected into experimental mammals, certain cells of the connective tissue series stain more intensely than others. This was first demonstrated by Ribbert ('04). Investigation of this system by means of colloidal dyes has since been greatly extended by Goldman ('09), Kiyono ('14), and their students. The deeply staining cellular constituents may be collectively designated chromophils, the lightly staining chromophobes. However, it must be emphasized that the difference between these two groups of cells is not one of positive and negative reaction, but simply one of degree of intensity of positive reaction. The line of demarcation between the two groups in adults must therefore be more or less arbitrarily drawn. In the embryo the line is entirely absent. The entire system, including the parent mesenchyme, is almost uniformly chromophilic. Under the chromophobes in adult mammals Aschoff classifies: 1, the endothelial cells of the blood and lymph vessels; 2, the fibrocytes, or ordinary connective tissue cells. The chromophils include: 1, the reticulum cells of the splenic pulp, and of the cortical nodules and pulp cords of lymph nodes; 2, the endothelial cells of the sinuses of the lymph nodes, the blood sinuses of the spleen, the capillaries of the liver lobules (including Kupffer's stellate cells), the capillaries of the bone marrow, the adrenal cortex and the pituitary gland. This chromophil group constitutes the specific reticulo-endothelial system of Aschoff. Chromophil free-cell derivatives of this system include the wandering cells of the connective tissues (histiocytes of Kiyono; clasmatocytes of Ranvier), and the splenic and circulatory monocytes. The chromophil group includes also the hemohistioblasts of Ferrata. These are capable of differentiating either into blood elements or into chromophobe connective tissue.

In the embryo even the aortic endothelium constitutes functionally part of the reticulo-endothelial system. Subsequently, the system, as regards endothelium, becomes more and more restricted to the sinusoids and capillaries of certain organs. But during the second month the endothelium of the midventral portion of the abdominal aorta, in relation to the caudally migrating celiac axis, and the superior and inferior mesenteric arteries, proliferates locally to form so-called aortic cell clusters, the elements of which differentiate into red blood cells (Jordan, '16, '17 and '18). More-

over, under pathologic conditions endothelium anywhere may liberate phagocytes (Foot, '25).

The most recondite matter in this connection concerns the degree of genetic relationship between the reticulo-endothelial apparatus and the lymphocytes. Aschoff makes the categorical statement that we must still insist upon a definite distinction between reticulum cells on the one hand and lymphocytes on the other. However, more recent investigations apparently show conclusively that lymphocytes differentiate directly from reticulum cells; and, further, that under certain conditions lymphocytes may differentiate directly also into phagocytes or into specific blood cells, either granulocytes or erythrocytes.

The difference in intravitam staining reaction between the lymphocytes of the spleen and of the lymph nodes, the former being chromophilic like reticulum cells generally, the latter chromophobic, may be simply a matter of degree of differentiation along the line of phagocytosis.

Histologic study of the spleen and lymph nodes seems to show that lymphocytes differentiate from the reticular stroma, large lymphocytes from the larger reticulum cells, small lymphocytes from smaller reticulum cells. However, simple study of sections, no matter how favorable, always leaves a degree of uncertainty regarding the actual process of transformation. This is obviated in tissue culture study. Such studies have been made by Chlopin and Chlopin ('24). In tissue cultures of the spleen of a salamander, Axolotl, they report and illustrate the actual transition from reticulum cell to lymphocyte. Maximow ('22) had previously recorded a similar result in the case of tissue cultures of lymph nodes of the rabbit. Lymphocytes are accordingly to be regarded as free-cell constituents of the reticulo-endothelial system. However, in mammals they apparently do not answer to the specific criteria for cells of the system, namely, deep-staining reaction to intravitam administration of colloidal dyes and intense phagocytic activity. But such specific reactions can be induced under certain conditions. Downey ('17) shows that in a segment of the femoral vein, isolated by double ligature, the lymphocytes phagocytose pyrrhol-blue and become typical chromophils. Under these conditions lymphocytes have become rapidly converted into typical monocytes, specific free-cell portions of the reticulo-endothelial system.

Simpson ('21) has claimed to be able to differentiate between lymphocytes and monocytes in certain mammals on the basis of a differential response to the supravital application of neutral red, trypan-blue, etc. Lymphocytes are said never to contain more than eight stained globules of a so-called "segregation apparatus," monocytes are said to contain from 40 to 60 such globules. Simpson claims that no transition forms occur with regard to the number of stained globules between lymphocytes and monocytes. However, I have been able to show by employing a similar supravital staining technic, that in the case of the blood of the frog this criterion for differentiating between monocytes and lymphocytes completely breaks down. Here there occurs a closely graded series of transition stages between mononuclear lymphocyte-like cells with few stained granules and similar cells with many globules.

Moreover, by injecting India ink into the dorsal lymph sac of the frog, and then examining specimens of blood at regular intervals, it can be demonstrated that while typical monocytes, of relatively large size and with reniform nucleus, first and almost immediately pick up the carbon particles in large numbers, after the end of twenty-four hours even the small lymphocytes also phagocytose large numbers of these particles. Under the experimental conditions calling for intense and widespread phagocytic activity, typical lymphocytes are stimulated to behave like typical monocytes.

As regards phagocytic activity, therefore, the lymphocytes are capable under certain conditions of expressing one aspect of their primitive polyvalency, to the exclusion of other potencies and then function as typical phagocytes, indistinguishable from monocytes. Lymphocytes thus may speedily differentiate into monocytes. In other words, lymphocytes are as truly a part of the reticulo-endothelial system as are the Kupffer cells or the ubiquitous monocytes. They constitute a circulatory portion of the reticulo-endothelial system. They have actually separated from reticular stroma, and maintain their primitive potential capacity of phagocytosis. In another sense, the formation and distribution of lymphocytes may be regarded as the most efficacious method for quickly mobilizing in case of need, portions of the reticulo-endothelial system capable of quickly differentiating into the required type of cell.

The interpretation of the lymphocyte as a

relatively undifferentiated mesenchymal derivative, endowed with multiple developmental potentialities, the expression of any particular one depending upon what specific stimulus may impinge upon it in greatest degree, is greatly weakened since it rests heavily upon Amphibian material if we accept the claim of Alder and Huber ('23) that amphibia and reptiles lack true lymphocytes. These investigators assert that genuine lymphocytes do not occur in forms below birds. The cell of amphibian blood, with all the morphologic features of a lymphocyte, they regard as a circulatory hemocytoblast, a parent cell of erythrocytes and granulocytes. However, there would appear to be no justification on histologic or physiologic grounds for restricting the term lymphocyte to super-reptilian bloods, and thus denying for the lymphocyte of mammalian bloods the same hemocytogenic and phagocytogenic function possessed by the lymphocyte of amphibia. On the contrary, comparative hematology shows fairly clearly that earlier blood cells are exclusively lymphocyte-like forms, and that during racial history the various specific forms of red and white blood cells have developed from this common mother cell. In individual history, as in racial history, the lymphocyte would seem actually to be the common hemocytoblast. As regards lymph nodes, while it is true that these occur typically only in certain birds and in mammals, their beginnings are already foreshadowed in various aggregations of lymphocytes in amphibia and reptiles.

The case is very similar as regards the relation of the reticulo-endothelial system to blood formation. In the various hemopoietic organs, yolk-sac, spleen, liver, bone-marrow,—even in the thymus and lymph nodes under certain conditions,—erythrocytes and leucocytes differentiate from the elements of this system, either reticulum cells or endothelium. Such cells of the reticulo-endothelial system, with a hemogenic bias, constitute the hemohistioblasts of Ferrata. As free cell derivatives they are known as hemocytoblasts. These may differentiate, depending upon specific stimuli, either into erythrocytes, monocytes or granulocytes. These hemocytoblasts are very like lymphocytes. The case with which a closely graded series of transition stages between typical hemocytoblasts with nucleolus, and typical lymphocytes with coarsely granular nucleus without nucleoli, may be arranged in active hemopoietic tissues, suggests a close genetic relationship. Indeed, the evidence is now fairly complete that typical lymphocytes may actually under certain conditions differentiate into erythrocytes and granulocytes. The earlier evidence was again exclusively histologic, e. g., Badertscher ('15), Lalta ('21), etc. More recently Chlopin and Chlopin ('25) in their tissue culture experiments have demonstrated that typical lymphocytes differentiate directly into granulocytes, special and eosinophilic. And while they assert that erythrocytes arise directly from reticulum cells, the hemohistioblasts, their illustrations nevertheless show a lymphocyte transition stage.

I am now in possession of histologic material which demonstrates the same point. This material consists of a submaxillary lymph node of a rabbit, three human lymph nodes in connection with the parotid gland, and two abdominal lymph nodes of the dog. They vary considerably in respect of details, but agree in showing the direct transformation of lymphocytes into erythrocytes. I may, therefore, confine this description to the rabbit's lymph node. This node is apparently disconnected from the lymphatics. Its cortical portion consists of a thin discoid mass of lymphocytes without trace of nodules. No peripheral lymph sinus is discernible. Many of these lymphocytes are in process of degeneration; certain groups immediately adjacent to the blood vessels are at various stages of differentiation into erythrocytes. The wide medulla consists of narrow cords and wide irregular sinuses. These medullary sinuses have a wide-meshed stroma of irregular reticular cells, many apparently in stages of degeneration. They contain also occasional erythroblasts and lymphocytes. The node as a whole lacks fat cells, granular leucocytes and phagocytes.

The medullary cords are of primary interest and importance in this connection. The majority contain an axial thin-walled blood vessel with more or less stagnant blood; some are "solid" without remnant of blood vessel; a few are in transition stages, showing the obliteration of a central blood vessel by disruption of its wall and cellular invasion of its lumen. All of the cords are enveloped by an epithelioid membrane, of reticulum cell origin, indistinguishable from endothelium. This reticulum endothelium is continuous proximally with the proper endothelium of a cordal blood vessel. Thus originally extravascular cells become transferred en masse intravascularly.

The evidence is in accord with Downey's recent conclusion, accepted by Aschoff, that "reticulum cells and endothelial cells are one and the same type of cells." The majority of the cells of the cords are at some stage of transformation into erythrocytes. Some of the more peripheral cells are suffering karyorrhexis. The cords in the later stages of transformation practically lack reticular stroma. Here the reticulum cells have differentiated into lymphocytes; and the latter, under the influence of transudation products of the stagnant blood, most probably a matter essentially of an increased concentration of carbon dioxide, are becoming transformed into erythrocytes. Most of these differentiating lymphocytes are at normoblast stages, a few at late erythroblast stages with much hemoglobin in their cytoplasm. This material would seem to furnish a clear demonstration of the capacity on the part of the lymphocytes to differentiate under certain conditions into red blood cells. Most likely lymphocytes transported to the red bone marrow pass through a similar history of transformation into red blood cells. Indeed, such history may be the answer in large part to the persisting enigma regarding the fate of the vast number of lymphocytes which daily leave the blood stream. This hypothesis of lymphocyte fate at least obviates more adequately than any other the vast discrepancy between the number of lymphocytes known to be daily lost and the number whose disappearance can be accounted for by an observable route, such as the intestinal epithelium.

From the standpoint of hemocytopoiesis then, no less than from that of phagocytopoiesis, the lymphocyte represents a free-cell circulatory portion of the reticulo-endothelial system. It is formed largely in the spleen and lymph nodes and differentiates under the more favorable conditions prevailing in the red marrow, largely into erythrocytes and granulocytes. Instead of separating the lymphocyte from the reticulo-endothelial system, it may actually be considered as almost its most important element. Depending upon variable conditions, it answers to all the specific criteria of this system: origin from reticulum or endothelium, ability to differentiate into a phagocytic cell with a high degree of activity, and ability to function as a red-cell ancestor. The varied and interchangeable developmental ability of reticulum, endothelium, and lymphocytes is explicable on the basis of the close genetic relationship of these three tissues and their low degree of differentiation with respect to the polyvalent parent mesenchyme. Even the lymphocyte maintains this original polyvalency, and like endothelium and reticulum may, depending upon conditions, differentiate into phagocytes, granular leucocytes or erythrocytes.

The varied and extensive function of the reticulo-endothelial system in normal histology, suggests its varied involvement in pathologic histology. Thus, according to Aschoff, this system becomes secondarily involved in Gaucher's disease, and in certain cases of hemochromatosis. The splenomegaly of Banti's disease apparently represents a primary hyperactivity of the reticulo-endothelial system: similarly in the case of monocytic leucemia, and possibly other forms of leucemia, and in pernicious anemia. And, finally, true neoplasms of the reticulo-endothelial system also probably occur, among which, according to Aschoff's suggestion, may be classified certain of the primary endotheliomas of the spleen, bone marrow and lymph nodes, so carefully studied and fully described by Ewing ('22). The lymphosarcomas would represent tumors of this class in which the lymphocyte element of this system preponderates.

LITERATURE

Alder, A., und Huber, E.: 1923. Untersuchungen ueber Blutzellen und Zellbildung bei Amphibien and Reptilien. *Folia Haematologica*, Bd. 29, S. 1-22.

Aschoff, L.: 1924. Lectures on Pathology. New York.

Badertscher, J. A.: 1915. Development of Thymus in the Pig. II. Histogenesis. *Am. Jour. Anat.*, Vol. 17, pp. 437-493.

Chlopin, N. G., und Chlopin, Anna L.: 1925. Studien ueber Gewebskulturen im artfremden Blutplasma. III. Die Histogenese der Zellformen in den Explantaten der blutbildenden Organe des Axolotls. *Arch. fur. exp. Zellfors.*, Bd. 1, S. 193-250.

Downey, H.: 1917. Reaction of Blood and Tissue Cells to Acid Colloidal Dyes under Experimental Conditions. *Anat. Rec.*, Vol. 12, p. 429.

Ewing, J.: 1922. Neoplastic Diseases. 2nd Ed. Philadelphia.

Ferrata, A.: 1918. Le Emopatie. Vol. I, Part General; Vol. II, Part Speciale (1923). Soc. editr. libraria, Milano.

Foot, N. C.: 1925. The Endothelial Phagocyte. A Critical Review. *Anat. Rec.*, Vol. 30, pp. 15-51.

Goldmann, E. E.: 1909. Die innere and aussere Sekretion des gesunden und kranken Organismus im Lichte der vitalen Farbung. Theil I. *Beitr. z. klin. Chir.*, Bd. 44, S. 192. 1912. Die innere und aussere Sekretion, u. s. w. Theil II. *Beitr. z. klin. Chir.*, Bd. 78, S. 1.

Jordan, H. E.: 1916. Evidence of Hemogenic Capacity of Endothelium. *Anat. Rec.*, Vol. 10, pp. 417-420.

1917. Hemopoiesis in the Mongoose Embryo, with Special Reference to the Activity of the Endothelium, Including that of the Yolk-Sac. Pub. 251, Carnegie Institution of Wash., pp. 291-312.

1918. A Study of a 7-mm. Human Embryo; with Special Reference to Its Peculiar Spirally Twisted Form, and Its Large Aortic Cell-Clusters. *Anat. Rec.*, Vol. 14, pp. 479-492.

1924. The Significance of the Spleen in the Light of Embryological, Evolutionary and Experimental Data. *Virginia Medical Monthly*, Vol. 51, pp. 537-544.

1925. A Study of the Blood of the Leopard Frog, by the Method of Supravital Staining, combined with the Injection of India Ink into the Dorsal Lymph Sac, with Special Reference to the Relationships among leucocytes. *Am. Jour. Anat.* Vol. 35, pp. 105-131.

1926. The Transformation of Lymphocytes into Erythroblasts in a Lymph Node of a Rabbit. *Anat. Rec.*. Vol. 32, pp. 369-393.

1926. The Erythocytogenic Capacity of Mammalian Lymph Nodes. *Am. Jour. Anat.*, Vol. 38, pp. 255-279.

Jordan, H. E., and Speidel, C. C.: 1924. Studies on Lymphocytes. II. The Origin, Function, and Fate of the Lymphocyte in Fishes. *Jour. Morph.*, Vol. 38, pp. 529-548.

1924 Studies on Lymphocytes. III. Granulocytopoiesis in the Salamander with Special Reference to the Monophyletic Theory of Blood-Cell Origin. *Am. Jour. Anat.*, Vol. 23, pp. 485-505.

1925. Studies on Lymphocytes. IV. Further Observations on the Effects of Splenectomy in the Frog. *Jour. Morph. and Physiol.*, Vol. 40, pp. 461-477.

Kiyono, K.: 1914-A. Die vitale Karminspeicherung. Jena. 1914-B. Zur Frage der histiozytaren Blutzellen. *Folia Haematol.*, Bd. 18, S. 49.

Krumbhaar, E. B.: 1926. Functions of the Spleen. *Physiological Reviews.* Vol. 6, pp. 160-200.

Laguesse, E.: 1890. Recherches sur le development de la rate chez les Poissons. *Jour. de l'Anat. et de la Physiol.*, T. 26, pp. 345-406; 425-495.

Latta, J. S.: 1921. The Histogenesis of Dense Lymphatic Tissue of the Intestine (Lepus). A Contribution to the Knowledge of the Development of Lymphatic Tissue and Blood Cell Formation. *Am. Jour. Anat.*, Vol. 29, pp. 159-212.

Maximow, A. A.: 1922. Untersuchungen uber Blut und Bindgewebe. VII. Ueber 'in vitro' Kluturen von Lymphoidgewebe des erwachsenen Saugertierorganismus. *Arch. f. mik. Anat.*, Bd. 96, S. 494.

1923. VIII. Die zytologischen Eigenschaften der Fibroblasten, Retikulumzellen und Lymphozyten des lymphoiden Gewebes ausserhalb des Organismus, u. s. w., *Arch f. mik. Anat.*, Bd. 97, S. 19.

1924. Relation of Blood Cells to Connective Tissues and Endothelium. *Physiological Reviews.* Vol. 4, pp. 533-563.

Richter, M N.: 1925. Observations on the Hemohistioblasts of Ferrata. *Am. Jour. Med. Sci.*, Vol. 169, pp. 336-345.

Ribbert, H.: 1904. Die Abscheidung intravenos injizierten gelosten Karmins in den Geweben. *Ztschr. f. allg. Physiol.*, Bd. 5, S. 201.

Simpson, Miriam E.: 1921. Vital Staining of Human Blood with Special Reference to the Separation of Monocytes. U. of Cal., Pub. in Anat., Vol. 1, pp. 1-9.

Discussion

Dr. J. Shelton Horsley, *Richmond:*—We owe a distinct debt of gratitude to Dr. Jordan for this paper. The discussion of the reticulo-endothelial system at present is very timely. Coming from one of the great authorities on histology, it is of particular interest.

This designation proposed by Aschoff and Landau, in 1913, has attracted much attention. Dr. Jordan, in discussing the reticulo-endothelial system, has not only reviewed the literature, and the work of Aschoff, but has brought in more recent research and particularly the very valuable work of Dr. Jordan and his associates on the lymphocytes.

The lymphocyte seems to be getting its just dues from Dr. Jordan, who has demonstrated that it is a most important factor in the histogenesis of the blood, being an ancestor of both the red and the white corpuscles, besides having other ancestral duties that are not well established, such as the fixed connective tissue cells and a very close resemblance to the osteoblast. It is important to remember that the reticulo-endothelial system is not sharply defined. The prime requisite for cells to be admitted to the reticulo-endothelial system is phagocytosis. Under unusual conditions many cells are capable of phagocytosis that ordinarily are not considered phagocytes. The tests for degrees of phagocytosis for determining the reticulo-endothelial system have been intra-vitam staining by lithium carmine, trypan-blue, and other allied dyes. The cells taking up the dye granules most abundantly are considered to be most strongly phagocytic. Those that stain but weakly, taking up few of the granules, are poorly phagocytic. Aschoff gives six classes of cells which take up the stain to a greater or less extent, but limits the reticulo-endothelial system to two classes, that is, the reticulum cells of the splenic pulp, the cortical nodules and pulp cords of the lymph nodes, and ultimately of the remainder of the lymphoid apparatus, as well as the reticulo-endothelial cells of the sinuses of the lymph nodes, the blood sinuses of the spleen, the capillaries of the liver lobules (Kupffer's stellate cells), the capillaries of the bone marrow, the adrenal cortex, and the hypophysis. Other cells which take up the stain less readily, though are stained to some extent, are not included in this classification.

By this ruling the lymphocyte seems to be left out, because it is stained very slightly and has, according to Aschoff, but little if any phagocytic property. Dr. Jordan has shown, however, that under certain conditions the lymphocyte may become phagocytic and may also quickly give rise to other cells, such as monocytes, which are always strongly phagocytic. The appearance of granules in the cytoplasm seems to be a requisite for phagocytosis, but Dr. Jordan has shown that the lymphocyte may give rise to other white blood cells as well as to red blood cells, and sometimes the transition to other white blood cells is quickly made, and under certain conditions the lymphocyte itself can be phagocytic.

The property of phagocytosis being the chief quality of the cells of the reticulo-endothelial system, it is obvious that they concern not only the destruction and disposal of dead red blood cells and degenerating white cells, but that they have much to do with the attack of bacteria. They are concerned, too, not only with acute infections, but with many poorly understood chronic toxic conditions. The excessive action of the reticulo-endothelial system has necessarily some relation in certain diseases to

the destruction of red blood cells and primary anemia. On the other hand, an over production of certain of the cells in the reticulo-endothelial system, such as particularly the monocytes, may be responsible for types of leukemia.

This disarrangement of the cells of the reticulo-endothelial system is strikingly like malignant tumors in many instances. The cells become too abundant, toxic material is elaborated, the cells grow without law and order, frequently not going through the normal cycle of maturity, and in other ways resemble malignancy, though instead of having a solid stroma the stroma is the blood plasma. Ewing particularly has studied the primary endotheliomas of the bone marrow, an endothelioma which is called after Ewing's name. In addition to this, if we include the lymphocytes, as Dr. Jordan very properly seems to do, diseases of the lymph nodes such as lymphosarcoma must be taken as another clinical manifestation of pathology in the reticulo-endothelial system. Hodgkin's disease is from the reticulo-endothelial system.

The importance of this system, not only in diseases such as infection, even in typhoid and in other diseases in which a leukocytosis is not ordinarily looked for, and probably in the induction of certain types of immunity, is very great. The normal physiologic workings of the reticulo-endothelial system are, of course, highly important. Dr. Jordan seems to have demonstrated from his studies of the lymph node of a rabbit and in other ways that the lymphocyte is a direct ancestor of the red blood cell, and this may account for the large number of lymphocytes that are normally produced whose disappearance cannot be always accounted for by processes of digestion and other ways. If we can conceive that the lymphocyte gives origin to the red blood cell, in many instances this is the natural physiologic method for the disappearance of the lymphocyte that has not often heretofore been considered.

It is well known that aside from disposing of worn-out red blood cells and other cells and giving up the hemoglobin to form bile pigment, the leukocytes play a very vital part in normal absorption of food from the intestinal tract, and particularly of fats. In the process of this absorption any lymphocyte which surrounds the droplet of fat and takes part in the transition of this fat from the lumen of the intestine to the tissues undergoes, of course, destruction. Probably they are also concerned in the absorption of proteins and carbohydrates, but not in such an obvious way.

Dr. Harry T. Marshall, *University:*—As I think over the last twenty-five years in pathology, I can think of no more confused chapter than that on which Dr. Jordan has written his interesting paper. As short a time as three or four years ago, I heard an interesting discussion among some very well known pathologists on the question of lymphocytes. The pathological approach to the subject is in some ways a little different from the approach Dr. Jordan can make. If one studies a series of cancers one will find a certain percentage of them heavily infiltrated with these small round cells we call lymphocytes. In certain chronic diseases, particularly tuberculosis and syphilis, the lymphocytes are highly characteristic. The question has been raised, just what role do they play in these chronic inflammations? As I have said, there was absolutely no contribution pathologists could make to this question; they could not agree among themselves as to any useful function, any physiological activity, of the lymphocytes in these conditions. One of them said in conversation (not in writing), that the role of a lymphocyte, so far as he could see, was no more important to the body than that of a camp follower to an army. That was about the most extreme statement.

In regard to Dr. Jordan's paper, I have never heard of a lymphocyte's differentiating along the lines which he has mentioned. The plasma-cell type is very common. Occasionally they will absorb fluid and swell.

The reticulo-endothelial cells are capable of several lines of proliferation. One line of offspring may turn out to be erythrocytes; another line may go through the granulocyte stages of differentiation. Ferrata does not indicate that the lymphocyte itself under these conditions would be the ancestor of the red cell. The parent cell is supposed to be either a reticulum cell or an endothelial cell. By successive processes of mitosis and differentiation of offspring, cells arise progressively nearer and nearer to the erythrocyte in one case, to the granulocyte in the other. I think that the picture described by Ferrata in the lymph node can be seen in leukemia.

The real question raised by Dr. Jordan is this: He describes an object called a lymphocyte. The description is based on size, shape and staining. The important question is, "Are all cells lymphocytes which have the same size, shape and staining as the lymphocytes of the resting lymph node?" For example: If a reticulum cell proliferates and produces offspring eventuating in erythrocytes and if an intermediate stage of cell has the size, shape and staining of lymphocyte, must we, therefore, call this stage in the evolution of an erythrocyte a "lymphocyte?" To me the important question is to establish more precise definition of what is a lymphocyte.

HARELIP AND CLEFT PALATE.*

By J. S. HORSLEY, Jr., M. D., Richmond, Va.
Head of the Department of Plastic Surgery of St. Elizabeth's Hospital.

The plastic surgeon has no group of cases in which good results are more important or in which bad results are more conspicuous than in harelip and cleft palate. Upon accuracy, gentleness and careful attention to details depends the ultimate success of operations for the correction of these defects.

Harelip and cleft palate are congenital deformities. The embryonic clefts which enter into the formation of the lip and palate should close by the end of the third month of prenatal life. (Figure 1). According to Davis, in about one out of every twenty-four hundred babies, some part of these clefts remains open, thus causing the various types of harelips and cleft palates. Many theories have been advanced to account for the failure of the clefts to close. There is, however, ample room for speculation on this subject. In about 20 per cent of the cases an hereditary tendency is noted. Nearly always the mother of a baby with harelip or cleft palate will give a definite history of a fall, a fright or of some other ma-

*Read before the fifty-seventh annual meeting of the Medical Society of Virginia, at Norfolk, October 12-15, 1926.

ternal impression to which she attributes the abnormality. The greater number of these occurrences, however, takes place late in the course of the pregancy and can therefore have nothing to do with the deformity.

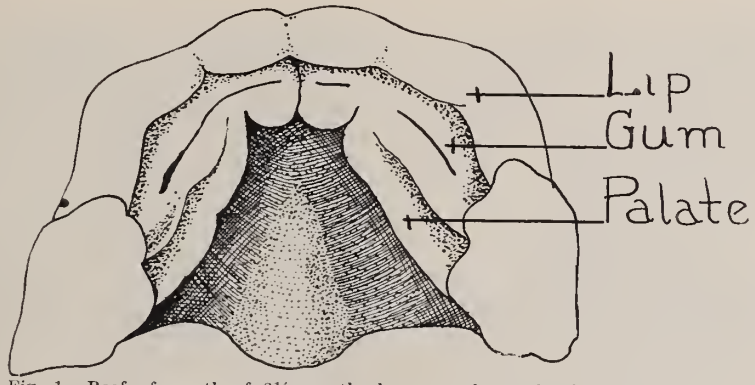


Fig. 1.—Roof of mouth of 2½ months human embryo, showing the opening in the palate. (Redrawn from His).

These abnormalities are not in themselves directly fatal but often are causes of ear, upper and lower respiratory, and gastro-intestinal diseases. If for this reason only, correction of the anomalies should be advocated. Yet, in addition, there is the comfort and appearance of the individual to be considered.

Time for Operation

The time for operation on harelip and cleft palate is an important factor. The deviation from the normal at birth is quite marked, but not as much as it will be later on if the clefts are allowed to remain open or are improperly closed. Therefore, the earlier and the more accurately the cleft is repaired, the better will be the ultimate result. The most desirable time to corrct the harelip is within the first few weeks after birth. If there is an associated cleft in the anterior alveolar process, this should be closed before the lip is sutured. Usually the two operations can be done at the same time. Early closure of the lip will improve the appearance of the face, and insure proper facial development and contour.

The most desirable time to operate on the palate is between the ages of six and eighteen months. During this period there is more

Fig. 2.—First step in correction of complete cleft palate. The adjacent parts of the alveolar processes have been denuded and heavy braided bronze wire passed through the bone on each side of the cleft. This is done before attempt is made to correct the harelip.
Fig. 3.—The braided wire tied, drawing the anterior alveolar processes together.

available tissue for the closure of the cleft than at birth, the palate tissues are better developed, and the shock of the operation is somewhat less. The palate should be closed before the child begins to speak in order to avoid defective articulation. Furthermore, early correction prevents the many complications which frequently accompany an open palate.

Fig. 4.—Dotted lines show proposed incisions for correction of left single harelip and deformity of the left nostril.
Fig. 5.—Corrected left single harelip and deformity of left nostril, with all the sutures tied except the tractor suture.

Pre- and Post-Operative Care

The details of the pre- and post-operative care are extremely important. No matter how technically perfect the operation may be, if the child is poorly nourished, if he has already a disease of the middle ear or of the upper respiratory tract, or if he is in any other way below normal physically, the operation will usually prove a complete or at least a par-

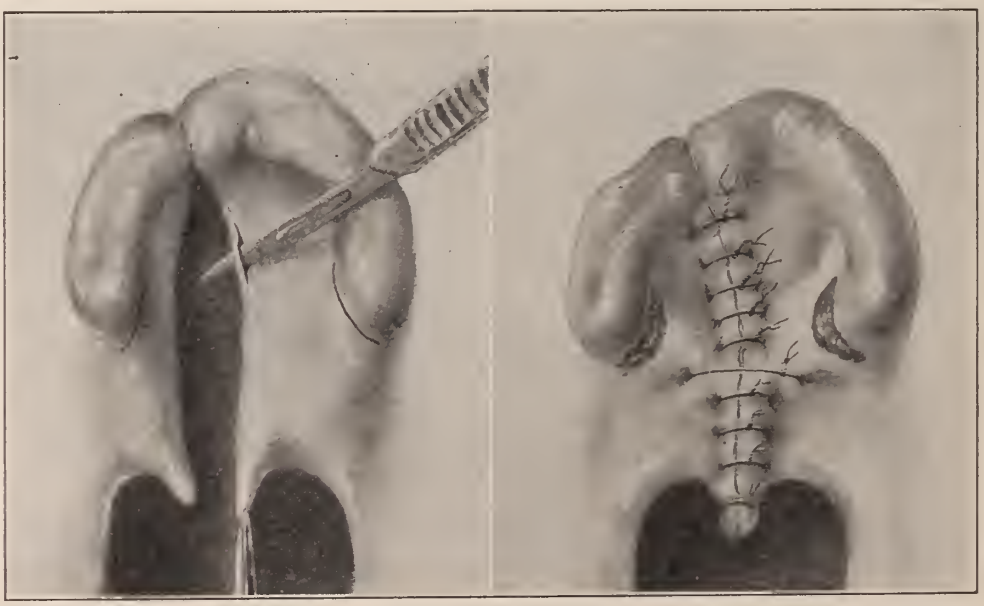


Fig. 6.—Second stage of cleft palate operation. The adjacent sides of the cleft are denuded by stripping off a narrow band of the mucous surfaces. Lines for relaxation incisions are made posteriorly and close to the alveolar processes.
Fig. 7.—All of the silver wire sutures have been tied, completing the closure of the cleft. Note the reinforcing silver wire suture at the junction of the hard and soft palates.

tial failure. Nutrition should be at its best. Rickets, secondary anemia, upper respiratory and middle ear infections are among the most common causes for postponing the operation. Babies who have been fed largely or entirely on condensed milk or preparations containing

Fig. 8.—Master A. S., age 4 years, on admission. Note complete left harelip with deformity of the left nostril.
Fig. 9.—Profile view of Master A. S. on admission. Note the anterior flare of the right portion of the upper lip.

high carbohydrate content and an improper protein and fat balance may look well, but careful examination will show flabby tissues. These babies do not stand such operations well. In older children, adenoids, tonsils and decayed teeth should be attended to before an operation for cleft palate is done. With babies

Fig. 10.—Master A. S., fifteen days after operation. Note correction of harelip and deformed nostril.
Fig. 11.—Master A. S., fifteen days after operation, profile view. Note absence of tension in upper lip and correction of anterior flare.

it is usually unwise to change markedly the customary feeding formula immediately preceeding or following an operation, as the change in feeding may upset them.

The patient should be in the hospital at least twenty-four hours before an operation for either of these deformities, in order that a thorough examination and preparation may be made. I use 25 per cent neosilvol or argyrol as drops in each nostril every four to six hours. If work is to be done on the palate, the palate is sprayed with warm 2 per cent boric acid solution after each feeding. Only sterile food is given in palate cases. This routine is started upon admission of the patient to the hospital and is continued after the operation until there has been complete healing. After operation, the baby's hands are secured so that the fingers cannot be placed in the mouth. If

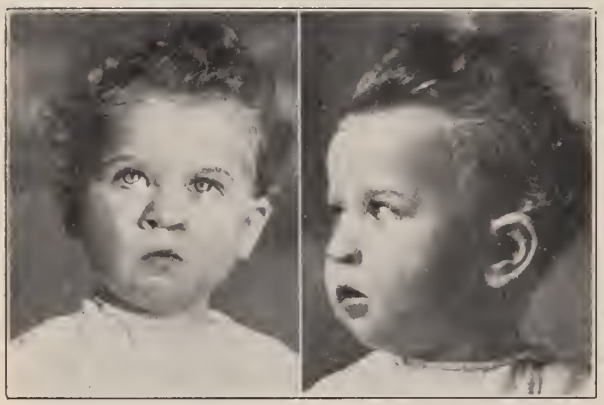
Fig. 12.—Baby girl, N. G., 4 months old, on admission. Note single harelip with marked protrusion of pre-maxillary process and deformity of left nostril. She also had a complete cleft palate.

the baby is restless, small doses of paregoric or codeine may be given. Every effort should be made to keep the baby comfortable and to prevent crying. As a routine, the little patient is given six to ten ounces of water containing 1 per cent sodium chloride and 4 per cent glucose as retention enemas several times during the first post-operative twenty-four hours. Sterile water may be given by mouth for the first eight hours and then any strained sterile liquid. The feedings should be given with a baby feeder or teaspoon. Nursing from the breast or a bottle with a nipple should not be

started until two weeks or more after the operation.

Types of Operations

The operation which I perform for harelip is a modification of the Rose operation. Before correction of the harelip it is always important to have a proper background for the lip to rest upon. If the alveolar process is cleft, or if there is a protruding, ununited premaxillary bone, both of these deformities should be corrected first. (Figures 2 and 3). Thorough mobilization of the surrounding tissues is important in all types of plastic procedures and especially in repair of the lip. To secure union without points of tension, the lip and alae of the nose must be dissected free from the maxillary bone. A successful operation for harelip requires: (1) that the muco-cutaneous border of the lip be accurately approximated; (2) that, after suturing, the lip be free from tension; (3) that the mucosa of the lip at the point of suture be slightly over-corrected; (4) that the accompanying deformity of the nostril be corrected. Figures 4 and 5 illustrate the steps in this harelip operation.



Figs. 13 and 14.—Baby N. G. 8 months after first operation in which successful closure of the cleft palate and correction of deformed left nostril and harelip have been done.

Fig. 15.—Master C. C., 12 years old, on admission, 11 years after attempted operation elsewhere for correction of double harelip and complete cleft palate. Note the notched deformity of upper lip and the over-riding pre-maxillary skin flap.

Fig. 16.—Master C. C., 17 days after plastic correction of upper lip.

Fig. 17.—Condition of palate of C. C., 11 years after attempted closure elsewhere, in which only the alveolar processes united. Note the wide cleft and the raised areas of scar tissue. The proposed lines for relaxation incisions are shown.

Fig. 18.—Palate of C. C. 3 weeks after operation. No attempt was made at this time to correct the raised areas of scar tissue and the small anterior triangular opening.

My procedure in the repair of cleft palate is based upon the principle of the Lagenbeck operation. The important steps here are: (1) to denude thoroughly the adjacent margins of the cleft; (2) to mobilize freely the muco-periosteal flaps from the hard palate through small relaxation incisions near the posterior part of the alveolar processes; (3) to maintain good nutrition in the flaps; (4) to approximate accurately the denuded margins of the cleft with interrupted fine silver wire sutures, care being taken to avoid undue tension. Figures 6 and 7 show the steps of the cleft palate operation.

Results

From November 1925 to October 1926 I have performed thirty-three consecutive harelip and cleft palate operations without a death or serious post-operative complications. Out of this number, there have been twelve harelip operations and twenty-one cleft palate operations. The results in several of these cases are shown in accompanying illustrations. (Figures 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18).

617 *West Grace Street.*

Discussion

Dr. W. L. Harris, *Norfolk:*—I think Dr. Horsley is to be congratulated upon his clear presentation of this horrible condition. There is no condition in the world which people are more grateful to have relieved. I think mothers, particularly, fail to recognize the importance of the nutrition of the child in this condition. I had a patient come here from Richmond several years ago, and the parents were very indignant because my good friend Horsley, in Richmond, would not operate. I told the mother he was right, that the child was in no condition to be operated upon. She was not satisfied and went to two of the leading surgeons in Norfolk, and they told her the child needed to be built up. She came back to me then and was satisfied to have me treat the child for three months, when I considered it was in condition to be operated upon. Then I got very good results. It is very difficult for a child with this defect to get sufficient nourishment. Most of them are not breast-fed; they are horrible condensed-milk babies. If the mother will insert a small calibre tube and feed the child vigorously by nasal or stomach tube and keep it in the sunlight, it will be in much better condition for operation.

A STUDY OF ACUTE UPPER RESPIRATORY INFECTIONS.

By WYNDHAM B. BLANTON, M. D., Richmond, Va.

A disease which affects 80 per cent of our population on an average of twice a year, against which preventive and curative measures are ridiculously ineffective, deserves repeated investigation and study. Especially is this true when the serious consequences and complications that follow in its wake are recalled. If we thought of our pneumonias, meningitises, brain abscesses, etc., oftener in terms of the usual antecedent upper respiratory infection, we would have more respect for the common cold.

The present study is based upon a review of the recent literature, and upon 800 answers to a questionnaire directed at certain aspects of the "cold problem." This method of investigation has been applied to the same subject by others, notably Townsend, Smiley and Barrow. In this locality we felt that many of the questions could be profitably repeated. Several additional questions have been investigated. Four groups of individuals make up the 800 studied. They were female operators and nurses (429), medical students (312), inmates of an old ladies' home (38), and children under eight (21).

The Frequency and Importance of Colds

Of the whole group reported, 80 per cent have had acute upper respiratory infections during the last twelve months. Among 403 female operators, 287 were affected (70 per cent.) Among 312 medical students, there were 298 involved (95 per cent). This 25 per cent higher incidence of "colds" in males may have an explanation in the more frequent use of overshoes and umbrellas by the females, as referred to later. The fact remains, that males are usually more exposed, and the greater incidence of "colds" among them is brought out in a comparison of men and women at Harvard and Stanford by Barrow.

The whole group averaged 1.7 "colds" during the last twelve months, and 2.4 for the previous years. The latter figure is more apt to be exaggerated. Again, it is noted that the males have more colds a year than the females—2 as opposed to 1.34. The low incidence among the aged (1.2), and the frequency of colds among children (3.6) is apparent, being about three times as great among the latter. These figures agree well with those of Townsend, who, among 1,272 individuals, found a rate of 1.9 "colds" per person—a morbidity of 1900 "colds" per 1000 population. Barrow's figures are still higher. Stanford men, 2.84; Stanford women, 2.09; Harvard men, 2.88. The repeated occurrence of "colds"

TABLE I

INCIDENCE OF COLDS IN THE WHOLE GROUP DURING THE LAST TWELVE MONTHS.

	Female Operators	Nurses	Aged Women	Children	Medical Students	Total
Total answers received	403	26	38	21	312	800
Number having colds	287	19	26	21	298	645
Percentage of colds	70	73	68	100	95	80

in the same season in the same individual is supposed to express a poor or short lived immunity. Cecil states that the immunity to a "cold" lasts from six to eight weeks. We have only recently encountered, however, an individual who experienced three colds in six weeks. The first was in the late summer and followed chilling of the body. The second was a sequence of the same character, and aborted in 24 hours. The third was a severe "cold" contracted during a house infection in which six or seven persons were involved. The explanation is simple and brings us to a reasonable classification of colds:

First, those which are not particularly contagious—"non-contagious" (Cecil), and which are probably due to organisms normally parasitic and docile inhabitants of our upper respiratory tract, acquiring invasive characteristics in the presence of a lowered resistance, usually from fatigue, chilling or other factors that lessen immunity. Second, those very contagious respiratory infections that depend upon the virulence of the causative organisms. A carrier or an unisolated acute coryza in the usual contacts of the winter months infects family after family. Increased virulence comes with repeated animal passage and "colds" sweep through whole families unabated.

For the whole group the average duration of these infections was 6.8 days, and the days lost from work were .6 for the year. 403 operators lost 177 days or .4 days per person. 312 medical students lost 280 days, or .9 days per person.

A graph plotted to show the monthly incidence of acute coryza in this locality displays two characteristic peaks, an especially high one in September and another during the months of January and February. Each subgroup separately plotted shows the same type of curve. Townsend produced similar graphs for other widely distributed localities (Boston, Washington, Chicago, New Orleans, San Francisco). He showed that in spite of the difference in climate there was a remarkably "synchronous behavior of the incidence of respiratory affections in all of the localities." Our curve conforms in the main with his except for the fact that last year September rather than October showed the higher incidence of "colds." It may or may not be of comfort to the sufferer to know that, while he endures "colds" in Virginia, the citizens of California and Massachusetts are equally subject to the same seasonal incidence.

TABLE II

AVERAGE YEARLY NUMBER OF COLDS REPORTED PER PERSON

	Female Operators	Nurses	Aged Women	Children	Medical Students	Total
For last 12 months	1.34	1.8	1.2	3.6	2.0	1.7
Previous years	2.2	2.2	--	--	2.5	2.4

Causative Factors: To the question, "To what do you attribute your 'colds,'" there were naturally many different answers, but a fairly simple grouping of them is possible. The great majority (705) considered changes of temperature responsible for their illness. Under this heading is grouped wet feet and clothes (146), drafts, natural and artificial (131), changes of atmospheric temperature (134), cold rooms, over-heated rooms, insufficient clothing, etc. A surprisingly few persons considered contact causative (36.) Only twelve mentioned poor ventilation. There is apparently little appreciation in this group of the factor of contagion. One catches "his

death of cold," not from another infected person, but through exposure of the body or other insults. If this be a true cross section of the public understanding of the origin of "colds," then there is need for dissemination of knowledge about the contagiousness of coryza and other respiratory infections. We need to know that handkerchiefs contaminate pockets and pockets in turn contaminate clean handkerchiefs and so we may constantly reinfect ourselves, and that the nursery handkerchief should be taboo.

mouth breathing, drafts, constipation, bathing, footwear and the removal of tonsils. He concluded that none of these were major factors in lowering resistance. He found that woolen clothes were no panacea, as there were almost twice as many "colds" among the wearers of woolens as among those preferring lighter underclothes.

In answering our question, "Do you wear over-shoes or carry umbrellas?", four times as many over-shoes were reported worn by women as by men, and the female users of umbrellas were twenty times as numerous. As this is an outstanding difference in the habits of the two sexes, it would be interesting to know how much relation it bears to the recognized greater incidence of "colds" among men.

TABLE III

THE CAUSES OF COLDS TABULATED FROM THE QUESTIONNAIRE.

	Medical Students	Operators	Nurses	Total	
Temperature				705	
Wet				146	
Feet	16	56	2		74
Clothes	25	47			72
Over-heating	77	6	2	85	
Cold room	4	12	2	18	
Lack of clothes	17	38	4	59	
Change of clothes	4	13		17	
Change of weather	89	42	3	134	
Drafts				131	
Natural	28	72	3		103
Artificial	2	26			28
Exposure	79	30	6	115	
Poor ventilation	6	6		12	
Contact	32	27	1	60	
Low resistance	25	1		26	
Susceptibility	7	3		10	
Stomach and bowels	9	1		10	
Bad throat—					
Tonsils, sinuses	3	4	2	9	
Dust	9			9	

The value of sterilization by boiling of the eating utensils of a person suffering from a cold has been repeatedly shown in camps and is applicable to household preventive medicine. We need more publicity about droplet infection, ventilation, and the high incidence of virulent bacteria recovered from agar plates exposed for only a few minutes to the air of a crowded room. The common towel, unwashed hands, the promiscuous cougher, the heedless sneezer, and the treacherous kiss of the acute coryza need to be held up for public condemnation. Isolation of those with colds is possible, though troublesome.

Smiley believed that a study of all the factors calculated to lower resistance might throw some light on the subject. He accordingly sought in his questionnaire for the influence on "colds" of such things as tobacco, dust, gas,

Barrow investigated the relation of the method of house heating to the occurrence of "colds" among the Stanford students without noting any great influence of one system over another. There was, however, a slightly lower susceptibility among users of wood and coal stoves. Of our total group, 694 answered the question on heating. Furnace heated houses numbered 402, stove heated 292. Eighty-three per cent of those living in furnace heated houses suffered from colds last year, while 76 per cent was the incidence among those whose homes were heated by stoves.

Complications: Ear involvement as a com-

TABLE IV

SHOWING THE RELATION OF HOUSE HEATING TO THE INCIDENCE OF COLDS.

	Furnaces			Stoves		
	Colds	No Colds	Per Cent	Colds	No Colds	Per Cent
Operators	98	51	----	182	66	----
Medical Students	226	12	----	35	1	----
Nurses	13	2	----	7	1	----
Total	337	65	83	224	68	76

plication of these infections in adults is not considerable in this group. There were eleven (11) cases. Sinus infection was much more frequent. Eighty-four cases were reported (11 per cent). Many excellent observers now believe that every coryza is accompanied by an infection of the paranasal sinuses. There is abundant autopsy and clinical evidence to substantiate this, and the intimate relation of the mucous membrane of the nose and these sinuses make the reason apparent. The routine use of suction and nasal shrinkage in the treatment of the coryzas is therefore indicated. It is stated that 75 per cent of all pneumonias begin in a "cold." Of the persons interrogated in this questionnaire, 27 stated that their "colds" had at one time or another developed into pneumonia.

TABLE V.

INCIDENCE OF EAR, SINUS AND PULMONARY COMPLICATIONS.

	Operators	Medical Students	Nurses	Total
Total No.	403	312	26	741
Ears	5	5	1	11
Sinuses	55	24	5	84
Pneumonia	11	16	----------	27

Prophylaxis: The problem is identical with that of any contagious disease. The first concern is with the infecting organism. Against virulent organisms the public should be protected by the means indicated above. If isolation is not enforced, prevalent bacteria should be rendered as relatively harmless as possible by ventilation, proper habits of coughing, sneezing, sputum disposal, hand washing, etc.

On the other side of the question is individual immunity. Vaccination, so successful in typhoid and other exotoxic diseases has naturally been tried repeatedly in the respiratory diseases. The reports of investigators is widely different. There is considerable evidence that a mixed prophylactic vaccine of the common upper respiratory organisms affects favorably the incidence of pneumonia. Cecil demonstrated it on a large group at Camp Upton. The occurrence of 173 cases of pneumonia in 19,481 unvaccinated as against 17 cases in 12,519 soldiers who were previously inoculated has great significance. Park and his co-workers in an investigation of the value of stock vaccines on New York Life Insurance Company employees also were impressed by the lowered incidence of pneumonia in the vaccinated. On the contrary, among a small group of my own, two out of one hundred inoculated developed pneumonia within the year. Is this experience applicable to anticold vaccination? One fact has to be borne in mind. We do not know what organism is the primary invader in "colds." Do the common mouth bacteria with which we are familiar (streptococci, staphylococci, pneumococci, influenza bacilli, etc.) play the whole role, or is there an unidentified germ, an anaerobe or filterable virus, which strikes the initial blow and prepares the field for the secondary invaders

with which we are acquainted? Foster and Olitsky claim to have conveyed colds by swabbing the pharynx of normal persons with material from the pharynx of acute coryza after first passing it through Berkfeld filters. This is certainly a likely theory in epidemic influenza, and it has its advocates as an explanation of some of the phenomena of colds. Valentine and Mishulow, in a cultural and serological study of streptococci from the inflamed mucous membrane of the upper respiratory tract, declared that there were so many groups and sub-groups serologically dissimilar that it was impossible to decide upon a dominant strain. They were of the belief that the strains isolated by them were not of primary etiological importance. With this possibility in view, it is easy to understand the weak point of vaccination against "colds." If a virus is the primary invader, our mixed vaccines are composed of bacteria entirely of secondary importance, and vaccination at best protects us only against the complications of "colds," sinuses, ears, pneumonia. It may do more. It may shorten or make milder the prolonged "cold" which in its later stage may be a disease of secondary invaders. So much for theory.

What are the facts about anti-cold vaccination? Von Sholley and Park reported the results of vaccination on 1,536 persons, and concluded that it was without value. McSweeney reported 1000 telephone employees vaccinated, two-thirds of whom later claimed to have been helped. Freudenthal maintains that it is effective against the so-called infectious "colds", but not against "colds" of exposure. Of the 800 persons interrogated by us on this point, there were 53 who had received the vaccine. Twenty-five (47 per cent) claimed to have been helped. Twenty-eight were not benefited. On the contrary, of 41 office patients, 30 (73 per cent) note from slight to great improvement (stock vaccine). Of the 94 combined cases, vaccination proved helpful in 57 per cent. The users of the properly prepared autogenous vaccine claim much better results. There are certain insurmountable difficulties in the routine use of autogenous strains. The expense and time element often put them out of the question. I have no doubt whatever that far better results are obtained with them employed at weekly intervals throughout the whole fall and winter season.

However varied prevalent ideas are about cold therapy, to neglect the active treatment of all "colds" is hazardous. The claim is made that "colds" may be diagnosed and cured before the onset of symptoms by the objective appearance of the mucous membranes of the eyes, nose and throat, and Dennett advocates the early instillation of silver salts into the conjunctivae as an effective way to sterilize the whole upper respiratory tract. There is little question about the effectiveness of rest in bed, warmth, fluids and alkalies in restoring and augmenting immunity. Shrinkage of the nasal mucous membrane and suction effectively promote drainage of the paranasal sinuses which seem to play a role in every cold. Local applications of silver, mercurochrome, and other so-called bactericidal agents are, of course, time honored procedures. There are, however, grave objections to swabbing and spraying. One wonders often if the injury to bacteria by these agents is not exceeded by the injury to tissue. Upon the same principle chlorine gas is advocated. Vedder and Sawyer reported in 1924 experiments, which, if confirmed, bid fair to revolutionize the whole treatment. They showed that the throat could be practically sterilized by inhalations of chlorine gas in concentrations of .02 mgm. per litre, and that in a closed chamber various respiratory infections could be effectively dealt with by using a concentration of .015 mgm. per litre. Of 931 "colds" so treated, 71.4 per cent

TABLE VI.

Effect of Prophylactic Vaccination for Colds.

Number vaccinated	Helped	Not Helped	Percentage Helped
53 (questionnaire)	25	28	47
41 (office patients)	30	11	73
94 (total)	55	39	57

were cured and 23.4 per cent improved. Feldstein claimed to have cured or improved 89 per cent of 2,640 coryzas treated by him. These claims are significantly unconfirmed in the recent literature. There has been peculiar silence about the so-called chlorine treatment. Cecil writes me: "It is expensive and impractical, and the results are in no way commensurate with the objections to its use." Of 800 persons to whom our questionnaire went, only 7 had taken the treatment. Only two of these thought they had gotten any results.

References

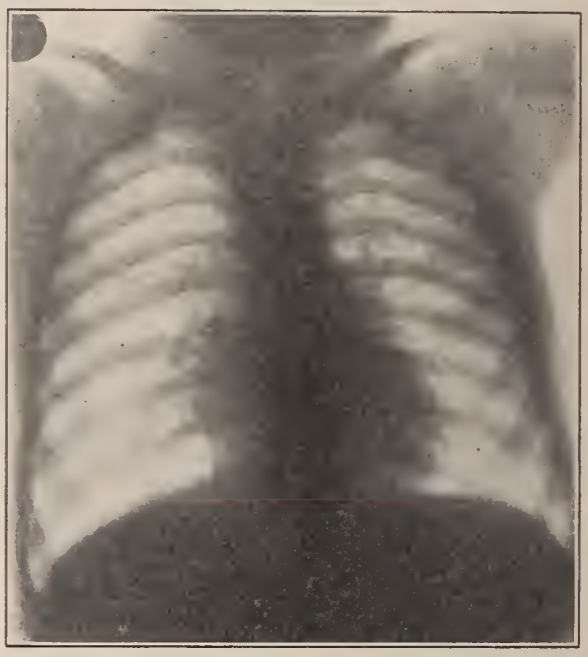
1. Barrow, W. H.: Group Susceptibility to Acute, Upper Respiratory Infections. *J. A. M. A.*, 89: 920, Sept. 18, 1926.
2. Townsend, J. G.: Epidemiological Study of the Minor Respiratory Diseases by the Public Health Service. *Public Health Rep.*, 39:2669, Oct. 24, 1924.
3. Stimson, P. M.: Review of the Literature on Respiratory Diseases from January, 1920, to June, 1921. *Amer. Jour. Dis. Ch.*, xxiii, 261, March, 1922.
4. Smiley, D. F.: Acute Infections of the Throat and Respiratory System. *J. A. M. A.*, 82:540, Feb. 16, 1924.
5. Vedder, E. B., and Sawyer, H. P.: Report on Chlorine as a Therapeutic Agent in Certain Respiratory Diseases. *J. A. M. A.*, 82:764, 1924.
6. Valentine, E. and Mishulow, L.: A Study of the Cultural and Serological Relationship of Hemolytic Streptococci Isolated From Inflammatory Conditions of the Respiratory Tract. *Jour. Immunol.*, vi:301, Sept., 1921.
7. Osburne, O. T.: Etiology and Treatment of Colds. *N. Y. Med. Jr.*, March, 1919.
8. Fantus, B.: The Therapy of Catarrhal Fever. *J. A. M. A.*, 75:1694, 1920.
9. Dennett, D. C.: Treatment of Colds. *Bos. Med. and Surg. Jr.*, clxxlx:41, 1918.
10. Kaiser, A. D.: Tonsillectomy in Children. *J. A. M. A.*, 87:1012, 1926
11. Cecil, R. L.: The Common Cold—Its Prevention and Treatment. *Med. Cl. No. Amer.*, 8:1, 1924.
12. Shibley, G. S., Hanger, F. M., and Dochez, A. B.: Common Cold P. Normal Bacterial Flora of Nose and Throat, with Variations Occurring During Colds. *Jr. Exp. Med.*, 43:433, 1926.
13. Von Sholly, A., and Park, W. H.: *Med. Rec.*, 98:1004, 1920.
14. McSweeney, E. S.: *Med. Rec.*, 98:1004, 1920.
15. Freudenthal, W.: *Med. Rec.*, 98:1004, 1920.
16. Dochez, A R., and Hanger, F. M.: The Common Cold. *Oxford Med.*, Vol. 4, p. 938.

300 *West Grace Street.*

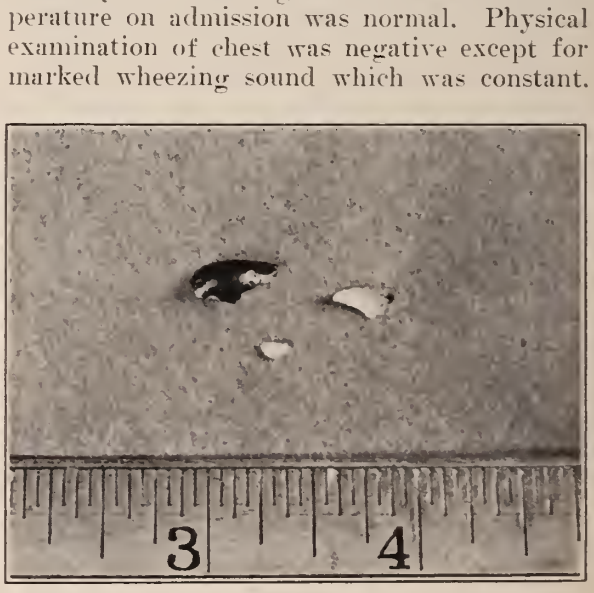
GRAIN OF CORN IN RIGHT MAIN BRONCHUS: REMOVAL BY USE OF BRONCHOSCOPE.

By E. G. GILL, M. D., Roanoke, Va.

Patient, age four, was admitted to the hospital, January 4, 1927, and gave the following history: December 31, 1926, child while eating parched corn suddenly strangled and coughed. Has had coughing spells at intervals since and has a wheezy sound all of



the time. Child has not had any particular difficulty in breathing and feels well. Temperature on admission was normal. Physical examination of chest was negative except for marked wheezing sound which was constant.



Blood count W. B. C. 11,600. Haemoglobin 65 per cent. Polynuclears 62 per cent. Lymphocytes, large 1 and small 37. X-ray examination of the chest did not reveal a foreign body or any pathological condition in either lung.

In view of the history which was so strongly

suggestive of foreign body aspiration, we decided to pass the bronchoscope. There was considerable amount of mucus in the trachea and bronchus. After this was removed, the grain of corn was readily seen in the right main bronchus and removed. Time of the operation was eight minutes. There was no post-operative reaction and the child left the hospital at the end of the second day. The wheezing breathing which was so marked on admission disappeared immediately following the operation.

Before passing the bronchoscope, we removed a number of grains of corn from the bronchus of the dog. The technique was quite similar to the one employed at the time of the operation.

Gill Memorial Eye, Ear and Throat Hospital,
Department of Bronchoscopy.

WHAT'S IT ALL ABOUT?*

By WRIGHT CLARKSON, M. D., Petersburg, Va.

Sometimes at night I go up on the housetop. There well above most of the surrounding city, I ponder and think and wonder "What's it all about?"

When fortunate enough to find the moon beams on the roof, the pleasure of my visit is greatly augmented, but, you know, I rarely think of what the weather or planetary setting is until I arrive, for, like most folks, my life is chiefly filled with the task of making a living.

Among other things, I wonder why such a great amount of one's time must be so spent. As physicians, we see many cases to which we would like to devote days of study, but few of us have enough time to spend on any one subject to become well acquainted with it.

Where lies the fault? Is it because the wage usually paid for our work is insufficient? Well, I don't think so. The case to which we wish to devote a month may not have one dime to pay us, but we usually have a few others to help along.

Why then has the Creator so destined our lives? Perhaps it's because it is necessary for most people to be kept very busy in order for them to keep out of devilment; but think of how much time we waste in our daily efforts. Why does one man accomplish so much more than another with apparently the same time and talents? Often it is a lack of judgment. I have in mind a certain prominent physician in our community who just yesterday left his office full of patients to go twenty miles to see about bringing home an old Ford in which he had met with an accident the night before. Any laborer could have done this, and for less wage than he could have demanded from his patients during the same time.

After all, it takes a busy man to accomplish things. The more routine work we have to do, the better trained we become in accomplishment, and after awhile we can do thrice the work and find ample time for scientific study and even recreation—an element that most physicans begin to think of after it is too late.

There is a cause for our existence. This great universe, in which the average individual is as a grain of sand in the great Sahara, will go on without you, but God must have some purpose for all of it. Surely, no sane man could deny the existence of a Supreme Being, no matter what his religion may be, and the more we consider the religion of others the more we realize that there is no certainty that any one is right. About the fundamentals, however, all sane human beings must think alike. There is some Divine Power. Man is not supreme. No matter what powers we may possess, we lie down and die without exception, and the marvels of nature continue without us.

What's it all about? Surely, no man can look up into the heavens really cognizant of even the elementary principles of the planets and not realize the existence of a God. Or, if there were no heavens, who could study the wonders of nature as revealed on earth and not believe? Believe what? At least that these things are being run by no power of our own, and their very existence and precision of repetition teach us that it is all a part of the eternal plan of some Supreme Being. To this Power I pray, believing it to be the Divine Jehovah, as we know Him, but never-the-less to that Supreme Power, whatever it may be, that rules the universe and has honored me with a chance to become a part of the "plan that is to work to the final good of man."

What man is there among us who does not wish to be great? None! At least I hope not! Surely, we all hope to be greater some day than we are at present. That is the enthusiasm in us, and when enthusiasm is dead, God help us!

Then why not be what we want to be?

*President's address delivered before the Third Annual Meeting of the Ex-Interns' Association of St. Elizabeth's Hospital, Richmond, Va., October 5, 1926.

Hard luck may play its part, but we all love the man that in spite of many disappointments always bobs up on top. Really, it isn't hard luck so much as it is procrastination and the influence of environment. As with the rising sun of each day there comes new hope, let us see in the whole year that is before us, until we meet again, the enthusiasm of greater accomplishment.

What will insure this? There are many things, but chiefly ABSTINENCE and ENTHUSIASM.

Abstinence is self-denial, a victory over evil indulgence and the power of defending that divine right every human being has to a successful career.

"Abstinence is self-defense."

Enthusiasm, representing vision, ambition and courage, is a picture of a goal to conquer with the necessary inspiration and determination to succeed.

Enthusiasm is Power!

It is forcibly illustrated in the following words of Brisbane:

> "Enthusiasm is the force that drives us.
> "At one end of the long road is the cradle, where we get our start and our teeth. At the other end that vague temple called Success—and just beyond it the grave, where, without teeth, we lie down and are forgotten.
> "Why we start, why we climb, what the power that drives us towards the shining temple, we do not know.
> "All except perhaps one in a million fail, grow tired, sit down to rest like the man in the picture.
> "Then hope flies away, and that is the death of enthusiasm."

So in closing, my wish to you is that the spirit of abstinence and of enthusiasm may be with you during the coming year. May you accomplish great things, do the things you really want to do and thereby meet with success.

CONGENITAL TORTICOLLIS.*

By PAUL C. COLONNA, M. D., New York, N. Y.

Torticollis or wry-neck is a distortion resulting from a contraction or shortening of one or more of the lateral muscles of the neck, usually the sternomastoid. Alexander the Great is said to have suffered from this deformity. The acquired form which is the more common and infectious in origin, we are not concerned with in this paper. Of the congenital or fixed type of torticollis, 269 cases were recorded from the total number of 55,000 new orthopedic cases seen at the Hospital for the Ruptured and Crippled, New York, in the six year period from 1920 to 1926. Of this number there were 122 females and 147 males, a slight preponderance of males. Only 88, or about one-third of the total number seen in the clinic, were admitted for operation, and the histories of 51 of these cases have been studied and reviewed for this paper. Of this review there were 24 females and 27 males, 24 involving the left side of the neck and 27 the right side.

The etiology in all cases cannot definitely be settled but the majority fall within one of two origins: (1) a primary congenital deformity due to some defect of the embryo—as cervical rib, an abnormal number of lumbar vertebrae, synostosis of atlas and axis, etc. This type is far less frequently seen, however, than those due to the so-called secondary congenital deformities, under which are classed those deformities resulting from a faulty intrauterine position. This mechanical theory seems the most plausible explanation to account also for most cases of club feet, clubbed hands and dislocated hips. Under this origin would also be placed those cases of torticollis thought to be due to an ischemia as a result of occluding the sternomastoid branch of the superior thyroid artery which supplies the sternomastoid muscle.

The theory that Stromyer propounded many years ago seems definitely disproved. He thought that congenital torticollis was usually caused by a rupture of the sternomastoid muscle-fibres by trauma, followed by a subsequent myositis developing in the hematoma, causing muscle contracture. As Whitman points in his text-book the rupture of muscles elsewhere is practically never followed by myositis with contracture, unless as demonstrated by Heller, an actual infection follows the muscle injury. In 22 of the cases it was found that 13 or about 60 per cent were recorded as having a difficult labor, but whether this was the cause of the subsequent wry-neck or the effect of the existing torticollis *in utero* would be difficult to say. In this series of 51 cases the wry-neck condition was noted at birth in 14 cases but in only one was the birth in any way unusual, this one case being a breech presentation. This agrees with the majority

*Read before the Ex-Interns' Association of St. Elizabeth's Hospital, Richmond, Va., at the Third Annual Meeting, October 5, 1926.

of observers, and therefore it seems likely that while hematoma may be a complication in congenital torticollis it can hardly be regarded as its cause, but rather the effect of a difficult labor from a faulty position *in utero*. The congenital type may be defined as a painless shortening of the neck muscles of intrauterine origin. Another point of interest in the study of these cases was the age when the deformity was noticed. In 42 cases the average age the child attained before the deformity was noticed, according to the statement of the mother, was between 11 and 12 months. This extremely high average is because several cases were reported as first noticed when about five years of age, but it seems inconceivable, in spite of the mother's statements, to believe such a deformity would pass unnoticed for this length of time. Disregarding these few cases the average is reduced to 3 months. The absence of a difficult labor in the majority of congenital torticollis cases as well as the short neck of an infant doubtless explains why the existing torticollis remained unnoticed for a few months after birth.

A case of bilateral congenital torticollis, showing the prominent sternomastoid muscles and the fixed attitude of the head in slight flexion. These bilateral types are extremely rare.

From the pathological standpoint there is found on examination of the sternomastoid muscle a sclerotic interstitial myositis which produces a dense induration and shortening of the muscle.

A child presenting its head inclined to one side, the chin twisted toward the opposite shoulder and the contracted muscle prominent, having in many instances a slight asymmetry of the face and a moderate scoliosis in the cervical region, presents a characteristic pic-

Showing the marked scoliosis which develops in untreated cases of torticollis.

ture of unilateral congenital torticollis. Bilateral contracture of the sternomastoid is very rare, producing great limitation of the movements of the head, and a characteristic fixed attitude.

The diagnosis in older cases is self-evident but in infants sometimes acute infections of cervical nodes, reflex irritations from otitis media, and cervical Pott's disease may cause confusion. Especially in the latter condition is it difficult at times to differentiate. A valuable point to remember is that in cervical Pott's disease in addition to the head movements being painful the chin is usually pointed toward the prominent sternomastoid muscle, while in congenital wry-neck the opposite is true. A positive X-ray in Pott's disease of an infant of course means much, but a negative one does not rule out tuberculous disease in the cervical region.

In very young infants a methodical stretching of the contracted tissues is usually all that is required to correct the deformity but cases over six months are rarely cured without an operation. Of the 269 new cases seen from 1920 to 1926, there were 140 or about two-thirds which were satisfactorily treated by methodical passive manipulation but in the

more resistant cases a tenotomy of the contracted parts had to be employed. The average age of operation in this series of 51 cases was 9 years, which doubtless accounts for the high percentage presenting facial asymmetry and cervical scoliosis, 80 per cent showing some degree of these sequelae.

Photographs on left illustrate typical attitude of the head with the accompanying facial asymmetry in congential wry-neck, and on the right are photographs of the same cases from one to three years after operation.

A subcutaneous tenotomy of the contracted tissues was formerly employed but the method is both dangerous and unsatisfactory. A careful dissection and tenotomy of the contracted bands through a two inch incision made just below and parallel to the clavicle is a most simple and satisfactory procedure. Some surgeons advise a more radical method, removing a section of the contracted sternomastoid at its mid-portion. Lange and Putti believe the approach at the origin of the muscle is preferable, in order that the scar may later be obliterated by the growth of hair on the scalp. Whatever the mode of tenotomy employed, it is essential to divide as far as possible all the limiting bands of muscle and fascial sheaths and to hold the head in the over-corrected position from four to six weeks. The simplest method is to employ plaster-of-Paris to hold the head in the desired attitude, which would be just the reverse of the wry-neck deformity and to employ daily massage and stretching of the neck muscles on removing the plaster.

From a summary of these cases we may conclude: (1) That congenital torticollis is a rather rare deformity—being seen in about one-half of one per cent of all orthopedic conditions. It is more common in males. Bilateral cases are extremely rare, the right side being the more frequently affected. (2) The majority of cases gave a history of normal birth. In those cases where labor was difficult and followed by hematoma formation, it was probably due to a faulty position *in utero* and was the effect rather than cause of the wry-neck. (3) The majority of cases remain unnoticed during the first few months after birth, the average age when noticed being about three months. (4) In older cases the development of facial asymmetry and cervical scoliosis is the rule. (5) The treatment in young infants consists of methodical passive stretching of the contracted tissues; in older cases an open tenotomy with plaster-of-Paris to hold the head in the over-corrected positon is the proper treatment.

59 *East 54th Street.*

DIET IN TREATMENT OF PERNICIOUS ANEMIA.*

By ESTILL L. CAUDILL, M. D., Narrows, Va.

Anemia may be defined as a reduction in the amount of the circulating oxygen-carrying

*Read before the Ex-Interns' Association of St. Elizabeth's Hospital, Richmond, Va., at the Third Annual Meeting, October 5, 1926.

constituent, called hemoglobin. A reduction of circulating hemoglobin is, in most instances, associated with a reduction of the cells which convey hemoglobin, namely, the red blood cells.

Pernicious anemia is an anemia of unknown origin which progresses, usually with remissions, to a fatal issue. The malady is by no means rare. The question of its causation is apparently far from solution, despite the multiplicity of theories that have been advanced. A distinguished clinician has described the results of treatment as ever more disheartening.

Heredity, infection, intestinal atrophy, defective absorption of nutriment, improper assimilation—these and other alleged causes of pernicious anemia have had a hearing and been for the most part abandoned as inadequate to explain all known facts. The Danish clinician Faber, in an address before the American Congress of Internal Medicine at Detroit last year reverted to the view that pernicious anemia has its origin in intestinal intoxication. Pointing to the association of this disease with achylia gastrica, he argued that this condition gives rise to various possibilities for the formation and absorption of hemolytic substances in the bowel, because of the transformation of the normal intestinal flora through lack of the usual gastric germicidal processes. Either the bacteria themselves or their toxins may consequently be taken into the blood stream. In other words, achylia gastrica distinctly favors intestinal intoxication processes. To this view is added the suggested possibility that with protracted hemolysis from any cause the hematogenic organs give out. Wells has ventured the further suggestion that their exhaustion may perhaps be hastened by the influence of the toxic substances in the blood, hematogenesis then becoming insufficient to replace the lost corpuscles.

In this paper I wish to call attention to the special diet recommended by Minot and Murphy, of Boston, and published in the *Journal of the American Medical Association*, August 14, 1926.

The most important recent work concerning the effect of food on blood regeneration has been done by Whipple and Robscheit-Robbins and their associates. Their carefully controlled work on dogs has demonstrated clearly the value of certain foods, especially liver, to accelerate blood regeneration following acute hemorrhage, and the value of iron added to the diet to decrease the anemia due to chronic blood loss. McCollum has pointed out that liver and kidneys give an exceptionally high quality protein for a low protein intake and can enhance remarkably, the growth of animals.

Various investigators have commented on the blood destroying properties of certain substances derived from fats and the role they play in pernicious anemia. Excess of fat in a diet is considered by some to favor putrefaction within the intestine, a condition frequent in pernicious anemia. One might attribute any benefit derived from a low fat content of the diet to alteration in the bacterial flora rather than to some more direct effect on blood formation or destruction.

Leafy vegetables and fruits usually are considered desirable for anemic patients, especially because of their iron content. Strawberries, rich in iron, appear beneficial to patients suffering with sprue, a disease very much resembling pernicious anemia. These foods are added to the diet, because they have especially favorable influence on hemoglobin production.

The special diet, which we have used on two cases, is as follows:

One-fourth to one pound of fresh liver, daily, broiled, or boiled, not cooked too done.

An equal amount of kidneys is occasionally used.

Beef and mutton muscle meat is used in from one-fourth to one-half pound daily.

Vegetables, low in carbohydrates, from ten to sixteen ounces daily.

Fruits, especially peaches, strawberries, oranges and grape fruits, are used.

Fats in form of butter and cream are allowed only in small amounts to make the food palatable.

An egg and some milk are permissible.

Breads, especially dry and crusty, cereals and vegetables are allowed in order to make a total intake between two and three thousand calories.

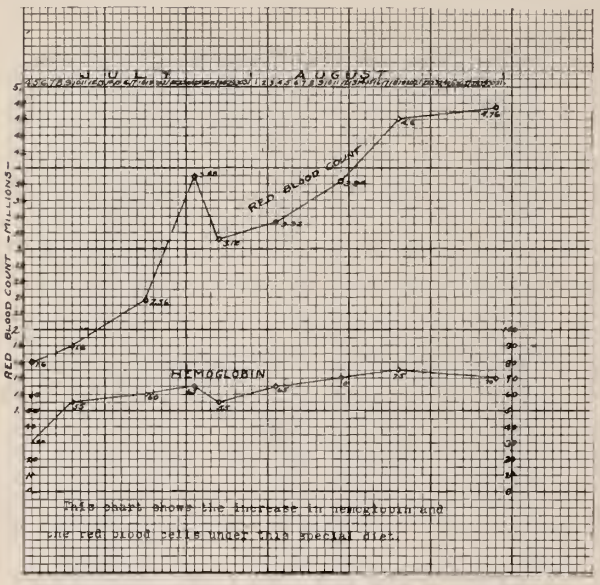
Concentrated sweets and sugar are allowed very sparingly.

This diet is rich in protein and low in fat.

I wish to report the following case:

Mrs. S., housewife, age 45 years, first entered the hospital on April 14, 1926, complaining of increasing weakness. She is unable to walk without assistance, complains of nocturnal headache which is severe; she is very nervous, has constant ringing in ears which is

very annoying, numbness of fingers and sometimes of lower extremities; color resembles very much that of grape fruit; conjunctiva markedly jaundiced. Her red blood count was 1,960,000, and the blood was typical of pernicious anemia.



She was given four direct transfusions of from 300 c.c. to 750 c.c. between April 4th and May 10th. Her red blood count on May 10th was 2,160,000. Her general condition was improved, jaundice had cleared up, and ringing in ears was better.

She re-entered the hospital on July 4th, with the same symptoms as at previous admittance, except that her condition was gradually growing worse. Her red blood count was now 1,600,000 and hemoglobin 30 per cent. She was given large doses of hydrochloric acid and started on diet as before mentioned.

The chart will show the blood picture following this treatment.

The patient at present is in a remission. Her condition is much improved. She is doing her own housework and says she is feeling fine.

RADIOLOGICAL STUDIES OF THE GALL-BLADDER.*

By R. G. WATERHOUSE, M. D., Kinston, N. C.
Fellow in Surgery, Cleveland Clinic, Cleveland, Ohio.

The gall-bladder has long demanded the attention of the surgeon and internist from the standpoint both of treatment and of diagnosis. The liver is not only the largest organ of the body but performs at least five very definite and vital functions one of which is directly dependent upon a properly functioning biliary tract. An improperly functioning or diseased biliary tract is the most common cause of disease and impairment of the liver.

These statements are so familiar as to seem trite. Yet, though we do see text-book pictures of catarrhal jaundice, of biliary colic, of cholecystitis, there is no definite symptom complex, no dependable clinical or laboratory sign or method, which will definitely condemn or exonerate a suspected gall-bladder, to say nothing of giving a definite differential diagnosis between the affections of the upper right quadrant such, for example, as are responsible for the so-called indigestions.

From the surgical standpoint diseases of the gall-bladder are often treated too late. The disease which at first may have been local in the gall-bladder or at least remediable by removal of the focus in the gall-bladder has progressed, giving rise to a cholangitis, hepatitis, pancreatitis, or adhesions, conditions in themselves capable of continuing the patient's symptoms.

The best radiologists are constantly seeking by all methods at their command to bring positive evidence to bear on just such cases.

Since the introduction by Graham of the so-called "Dye visualization of the gall-bladder," the attention of radiologists has been focused on the gall-bladder.

It is the purpose of this paper to show what we may expect from the X-ray department in diagnosing gall-bladder pathology.

Indirect Evidence of Gall-Bladder Pathology

In doing the usual barium meal examination the radiologist may observe an unnatural fixation of the pylorus or duodenum or an abnormal position of these structures, which to him is evidence of trouble in the area of the gall-bladder. Adhesions in this region in the absence of ulcer are usually due to the gall-bladder. Occasionally on the stomach plate a pressure defect of the duodenal cap will be seen. This is usually attributed to the gall-bladder. but may be due to other structures as, for example, a lobe of the liver. By filling the gall-bladder with dye and repeating the stomach plate this point can be determined.

*Read at the Third Annual Meeting of the Ex-Interns' Association of St. Elizabeth's Hospital, Richmond, Va., October, 5, 1926.

Gall-Stones

Gall-stones are classified chemically by Aschoff and Bacmeister as:

1. Pure cholesterin stones.
2. Stratified cholesterin-calcium stones.
3. Cholesterin-pigment-calcium stones.
4. Composite stones, composed of cholesterin and a mantle of cholesterin and calcium.
5. Bilirubin-calcium stones usually found in the bile passages of the liver.
6. The very rare calcium carbonate stones.

Cholesterin stones are of about the density of the surrounding tissues and usually do not cast a recognizable shadow on the plain plate. Whether or not a gall-stone will cast a shadow depends on the amount of calcium present. About 90 per cent of urinary calculi cast recognizable shadows. About 10 per cent of gall-stones cast shadows comparable to those of the average urinary calculus. By a careful technique, seeing that the patient does not breathe or move during the exposure, and by proper regulation of the penetration for each case, the maximum number of biliary calculi can be diagnosed by the radiologist.

Of the gall-stones removed at the Cleveland Clinic, 70 per cent were diagnosed pre-operatively by the X-ray department.

Fig. I. A. Shadow of gall-stone in anterior-posterior film. B. Shadow of same stone in posterior-anterior film.

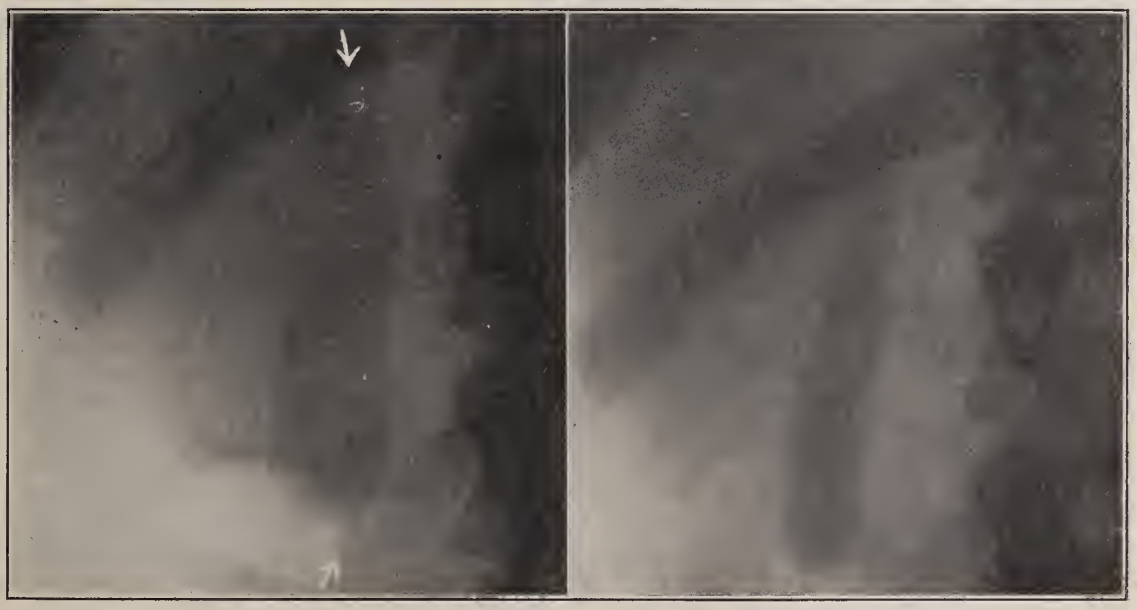


Fig. II. A. Dye filled gall-bladder. B. Emptying gall-bladder after fat meal.

The differential diagnosis of shadows in the area involves principally kidney stones, but calcified glands, enteroliths, foreign bodies, calcifications in blood vessels, calcifications in the right kidney, artefacts in the plate and even skin blemishes may give rise to suspicious shadows. Stereoscopic plates are of distinct advantage, giving a better idea of the relative position of the shadow as anterior or posterior or within or without the kidney outline. Calcified glands are usually more irregular in outline than calculi, enteroliths will usually have passed on at a second examination, an artefact is not present in all plates. Warts and the like on the skin are apparent on examination of the body surface.

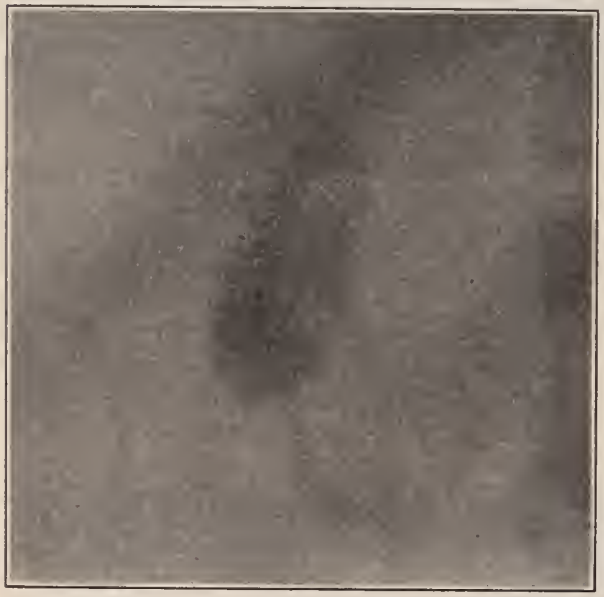


Fig. III. Double or sacculated gall-bladder containing cholesterin stones.

Calcifications in the kidney, tuberculous or otherwise, and calculi in the pelvis and ureter may require a pyelogram for proper diagnosis. However, even here the regularity of the gall-stone outline, the tendency toward multiple rather than single gall-stones and the fact that calcium is often present to any extent only in the outer layers of a gall-stone giving rise to a ring type of shadow, as contrasted to the denser more homogeneous though irregularly outlined kidney stone, often makes differentiation possible.

Dr. Nichols has for some time applied the principle used in localizing foreign bodies to gall-stones, and thus obviated the necessity of pyelograms in many cases. Two exposures are made, one posterior-anterior and the other anterior-posterior. In the posterior-anterior or gall-bladder film the gall-stone is farther from the target of the tube and closer to the film, hence the shadow is smaller and more distinct in outline than in the anterior-posterior or kidney film. It is likewise lower in position and closer to the shadow of the vertebral column. (Figure 1). By these criteria a diagnosis of gall-stones can be safely made.

Cholecystography

The function of the gall-bladder is a moot question. That it fills with bile there is no doubt, and it probably serves to regulate the pressure in the common duct as well as to store and concentrate bile during the interdigestive intervals when bile is not flowing into the intestine.

By the use of tetraiodophenolphthalein, following the work of Graham, we can determine whether or not the gall-bladder fills, something of its capacity to concentrate the bile, and whether or not it empties properly. From this data rather definite conclusions in regard to the gall-bladder can be reached.

Oral administration of the dye has proven very satisfactory, and this is the routine adopted at the Cleveland Clinic. Perhaps it would be well to give the technique in some detail.

When the patient reports to the X-ray department, plain films are made—at least one anterior-posterior and one posterior-anterior. The patient is then given an ampoule or fifty grains of the fresh dye, tetraiodophenolphthalein, in a sufficient number of double capsules, the smaller capsules containing the tetraiodophenolphthalein being enclosed in a larger capsule containing about ten grains of sodium bicarbonate. One capsule is taken at nine P. M. and one every twenty minutes thereafter until all, usually six, are taken. The usual meals are allowed before taking the capsules. At nine o'clock the following morning the patient reports to the X-ray department without having had breakfast. A plate is taken which normally shows a well filled gall-bladder and absence of the capsules in the intestinal tract. Faint shadows will be present especially in the colon area due to dye mixed with the intestinal contents. Three hours later while the patient is still fasting, another plate is taken. This normally shows the gall-bladder still filled, the shadow being somewhat denser and perhaps a

little smaller, the increased density being due to a larger portion of dye or to concentration due to absorption of bile by the gall-bladder. The patient is then instructed to eat a meal

Fig. IV. Typical gall-stones low and close to spine. A single stone in this area might be lost in the spine shadows.

containing considerable fat in the form of bacon and cream and to report in two hours, when another plate is taken. This plate normally shows the gall-bladder shadow smaller, evidently emptying. (Figure 2).

Using this technique only one patient has vomited the dye and this was a rather nervous type of individual. Occasionally a patient complains of a little nausea, and three or four have had a mild diarrhea.

A gall-bladder which fills and empties within the above periods may be said to be functioning properly. However, occasionally stones will be seen either as shadows or as filling defects. (Figures 3, 4 and 5). Once a calcified wall was demonstrated in a gall-bladder which fulfilled the above conditions for filling and emptying. Usually, if there is a stone in the gall-bladder which fills, concentrates and empties within the above time it is a cholesterin stone. The presence of these stones seems to be consistent with very little actual damage to the gall-bladder.

If the gall-bladder fails to fill the test should be repeated. If then it fails to fill and there is no evidence that the dye was not absorbed it is safe to say that the gall-bladder is pathological.

Delayed filling should be interpreted cautiously. The fault may be in the excretory power of the liver or the absorption of the dye.

An exploratory laparotomy was done on one patient because of clinical symptoms although the gall-bladder was reported normal from the X-ray and dye standpoints. The gall-bladder however appeared normal at operation and was not removed.

One case having vague clinical symptoms, but whose gall-bladder failed to fill at two examinations was found at operation to have a small contracted gall-bladder with stones and calcifications in the wall, none of which showed on plain plates.

Summary

1. By careful technique about 70 per cent of gall-stones can be demonstrated radiologically.
2. By the two plate method usually gall-stones may be differentiated from the kidney stones.
3. By the use of the Graham method of gall-bladder visualization we can get evidence of function or non-function of the gall-bladder not obtainable in any other way.

Fig. V. Typical gall-stones. Note relation to crest of ilium. Gall-bladder films should always include the upper pelvic region.

4. Some stones are recognizable as filling defects in dye plates which would otherwise not be diagnosed by X-ray.

CONTACTS IN PUBLIC HEALTH WORK.*

By ROY K. FLANNAGAN, M. D., Richmond, Va.
Assistant Health Commissioner.

Unappreciated Values

The State Board of Health of Virginia has under its present policies and leadership been

*Paper read before the State Conference of Public Health Workers in Richmond, February 17, 1927.

at work nearly nineteen years, and though much has been done to reduce disease and to promote health in Virginia in that time, it is yet a fact that in only a few places at best has the improvement and maintenance of the public health been accepted for what it really is—the most important of all functions of government,—the only one, in fact, that seeks to keep unimpaired the health and life of the people, the factor in human economy without which all others are worthless. In estimating our progress, therefore, it would be well for each health worker to realize that he, the conservator of that wealth, has not as yet fully impressed upon the public his tremendous value as a practical economic unit in the governmental scheme; in other words, he (or she) must get wise to the fact that he has not yet completely sold himself and his job.

The reasons for the comparative slowness of progress in health education are many, and nothing but time will cure many of them. Time is doing its work; those engaged in health work must do theirs. Some of the hindrances to health progress can be readily overcome. It is good sense to surmount them. Many are the helps to health work ready to hand. It is folly not to use them. Certain obstacles to the work are brought about by neglect of a necessary routine and much of the help that can be reasonably counted on by the health worker has to do with an attitude of mind that all can adopt. It is perhaps well to discuss for a little while some obvious but none the less important aspects of health practice that often escape detailed attention.

Help From the Public

The health worker's program is made up on the basis of definite and needed work and every energy should be applied to getting that work done quickly and, if possible, permanently. This cannot be without the help, physical and moral, of people. The more influential the people, provided there are enough of them, the easier the road to solid achievement. The health worker, like workers in other fields, will get little help from unfriendly folk. He should do his utmost, therefore, to reduce his unfriendly critics to the minimum. He must make friends and hold on to them. He will retain few friends if he does not do his work, but the hardest worker in the world will let himself out of a public health job if he does not show a friendly spirit in his contacts with the people.

Given this friendly spirit, coupled with knowledge of his job and energy to work at it, it is comparatively easy for a health worker to sit down with a moderately young, intelligent person having education above the fifth grade, and gain his acceptance of the truth of his health message and in the main his approval of the program he is trying to carry out. It is, however, difficult to make his message forceful enough to move that person to actively help in overcoming the prejudices and inertia of others older, less intelligent or alert. The majority in every community is uninformed in most progressive matters, and, though they readily respond to leadership, it takes real force of character and zeal in the leader to shake them out of old habits of thought and custom. Swivel-chair leadership will not do. It must be leadership by people who are out in front, earnestly and actively showing their belief in the matter at issue, not only with their minds but with their hands and their feet.

Name on Dotted Line

A man isn't really "sold" until he has signed up. The measure of success of the health worker is in the steady increase in the number of those who are willing to stand up and be counted as friends both to him and to his work; in other words, those who are willing to sign on the dotted line.

A salesman must know his "stock" and his "stuff" to start with. These meetings once a year, the bulletins of the State Board of Health, the visits and co-operation of workers from the home office and the experience gained in doing the job all help the worker to know his "stock." He ought, of course, not to be handling public health unless he is fully impressed with the fact that he has "good goods" to dispense. It will greatly help every worker if in the background of his or her mind is kept the fact that from the State Board of Health standpoint it is not a toxin-antitoxin campaign, not a sanitary privy or a good water supply, not a program of correctional work, not home nurse instruction or other segment of health work that is being offered to his people, but a greater measure of health and a more abundant life; that the thing presented at the moment, the clinic program, the sewage disposal system or what not, is but a necessary means to a great end, namely, a community eventually free from the handicaps of preventable disease, having the physical powers of its inhabi-

tants unimpaired and fully available for the building up of a prosperous and happy commonwealth. So much for the stock in trade. The health worker has the goods, now what is he going to do with them?

The Personal Touch

The problem of the health worker, as indicated in the beginning, is to induce the people in his field of activity to accept gladly what is offered, and to pay the price, not only because a good thing is presented to them, but because they have been convinced that the health worker can and will deliver the goods. This cannot be done in a haphazard way. The health worker must day by day make friends not only incidentally because he is a friendly person, but deliberately and systematically. In other words, he must sell himself, and this involves contacts as personal as they can be made—a consciously planned, continuous campaign to make people think well of him and his work. These friendly contacts must be going on all the time in the course of the day's work as opportunity is afforded, but in no case should the following contacts fail to be made and maintained even though special effort should be required and definite time allotted in his schedule for doing it:

1. Contact with headquarters—State Board of Health.
2. Contact with the local board of health.
3. Contact with the county or town governmental authorities—supervisors and town councils.
4. Contact with the school authorities—superintendents, principals, and teachers.
5. Contact with the physicians.
6. Contact with the general public—individuals and organized groups. Taking these up in order, we have:

1. *Contact with Headquarters.* — Contact with the State Board of Health should be maintained through the recognized head of the local health service—if a health unit, through the health officer; if other independent services, through the public health nurse or the sanitary officer, as the case may be.

It would seem that the necessity for maintaining close contact with the State Board of Health, which is responsible for the health workers and the work they accomplish, would be so clear that no one would fail to keep in touch; however, there have been some conspicuous failures in health services largely because the health worker did not keep headquarters sufficiently informed about the difficulties as well as the alleged progress of the work. Regular contact with headquarters is maintained by detailed reports and supplementary communications, as need arises.

Reports, with all of their time-consuming disagreeable implications, are absolutely necessary and cannot be neglected with impunity. Reports, of course, must be made on the faith of records regularly kept. This implies a program laid out in advance and a daily record at local headquarters, stating where the health worker plans to be at a given time and what he or she is supposed to be doing. A weekly sheet laid out by days should record the accomplishments of the week with such modifications as it has been necessary to make in the anticipated schedule; a diary notebook should always accompany the worker and no item of importance should be left out of the record. A specified time should be set aside each week for record keeping, and no other work, except real emergencies, should take precedence. No health worker in our generation will ever completely compass his job; so, however active he may be, something must be left undone. He need have no fears, therefore, that his work will be prejudiced in any essential degree by the time lost from work in making reports; on the contrary, he can rest assured that in the eye of his superiors a comprehensive though terse report of real work done will show that he not only can work but is willing to be judged by his record. The State Board of Health can be of immense service to workers in the field through its various bureaus, and reasonable demands upon it will always be met, though, of course, the service cannot always be exactly "on tap." Health workers must by all means keep in touch with headquarters.

2. *Contact with the Local Board of Health.* —Last year at this meeting I emphasized the necessity of the health worker, whether health officer, nurse or sanitary inspector, fully recognizing his or her subordinate relationship to the local board of health. It goes without saying that contact with the members of this board should be maintained. Enlightened local public health sentiment is represented by this board, and if it is not fully informed of the activities of the health worker and thereby not in position to give the facts when there is criticism of a given course of action by the worker, then trouble accumulates. The local

board of health is or should be the staunchest friend of the health worker. This friendship should be cultivated to the utmost by the closest possible touch. Local boards of health are supposed to have stated meetings. The health worker should regularly appear at these meetings with report of work done and to receive such advice and suggestions as the board may see fit to give. In the intervals between board meetings, communication by visits and otherwise should be frequent. Close contact with the local board of health is an absolute essential in health work.

3. *Contact with County or Town Authorities.*—It is from the board of supervisors and from town councils that support for county and town health work should come and the members of these bodies should early be made to feel their responsibility in this connection. This is true whether funds large or small are provided from the county or town treasury. The promotion of the well-being of the people in town and country, which is the active job of the health worker, is a paramountly important part of the business of government, and if the worker does not on all proper occasions emphasize this point of view before the representatives of the people, it may possibly not be fully realized. These governmental bodies are only too glad to be kept in touch with county and town affairs, and they usually like to be convinced that the way they are spending public money is wise. If the health worker can demonstrate this as a fact so far as his appropriation is concerned, then something like permanency to his work will be assured. These officials are not used to spending money to prevent trouble. They understand the necessity for schools, roads, courts, police, jails, almshouses and medical care of the indigent sick, but their contact with the preventive idea is recent, and it is the duty of the health worker to gain the attention of the individual officers and show the value and reasonableness of his program. Health workers must keep in touch with local officials.

4. *Contact with the School Authorities.*—All health work must be preceded by and accompanied by public health education. The school is the great center for education of all kinds. The great majority of people over forty years of age learned nothing about disease prevention at school, and many of them in consequence are woefully ignorant of its principles now. It is, therefore, of utmost importance that the educational system of a given locality be thoroughly imbued with the importance of the health program and that the full co-operation of the superintendent, principals and teachers be secured in carrying it out. This means that the most cordial relations must be maintained by the health worker with the educational authorities. While health is more important even than education, the health worker should, in his or her efforts to improve school health conditions, never act superior, but should make approach to the one in authority at the school as to a public servant who shares with the worker responsibility for the health and bodily vigor of his charges. It is of the utmost importance in contacts with schools and school children that due deference be given those in charge. This rule should apply to colored as well as to white schools, for discipline and good morale are as important in one place as in the other. The health worker must keep in touch with the educational forces of his bailiwick.

5. *Contacts with the Physicians.*—The active aid of the profession devoted to restoring to health those who suffer from the diseases the health worker is combating should, if possible, be secured. Rapid improvement in community health cannot be accomplished otherwise. The doctors know when and where sickness first occurs and where it is most prevalent, and are in the best position to discover early the source from whence it springs. Their advice and assistance is virtually indispensable, and it is to their everlasting credit that they are usually willing freely to do their part. The health worker should be most careful to consult with them on all possible occasions and observe with scrupulous care the reasonable boundaries between prevention of disease and its cure. When there is question in the worker's mind in regard to a course of action, give the physician the benefit of the doubt and, if the matter seems important, let the board of health settle the point at a future time. The physician is potentially the health worker's greatest ally. Intimate touch with the medical profession wherever possible must be maintained.

6. *Contact with the General Public.*—All of the views previously expressed in regard to contacts of health workers with different groups and special individuals, lead up to the great task of the health worker—the establishment of proper relations with the general pub-

lic whose welfare the health program is designed to promote. Perfect community health is the object aimed at, and the community must, if possible, be arrayed solidly behind the effort to achieve it. The specific duty of the worker may be to deal with only a few phases of the big job. He must devote himself to doing these thoroughly, and in every possible instance join hands with those devoting their time and activities to other aspects of the same large task. To this end, the interest of every organized group committed to community betterment must be cultivated and, if possible, enlisted. Every community has one or more of these—community leagues, Red Cross chapters, women's clubs, parent-teacher associations, health and tuberculosis committees or societies, farmers' organizations, business men's clubs, chambers of commerce, etc. The progressive public sentiment, male or female, of the community is sure to be found associated with them.

Information Broadcast

When the object to which all health work is directed is once clearly understood, every forward looking citizen must help promote it. These citizens must, therefore, be made to understand by unremitting appeal to them through every avenue to their minds. Not the smallest part, then, of the health worker's efforts must be given to a well-designed and persistently pursued plan to spread public health information. The direct contacts of the worker, however active he may be, can only reach comparatively few. Bulletins of the State Board of Health should be used, not indiscriminately, but on all favorable occasions after the interest of the individual or group has been stirred. News items should be regularly furnished the local papers. Papers should be read before organizations and societies. Newspaper articles on timely health topics, movie picture health reels, posters, exhibits, lectures and demonstrations must be utilized as occasions arise—all in an effort to make it unmistakably clear that the health worker is a supremely valuable public servant whose every effort is put forth toward raising the standard of physical well-being in the community. An actively useful citizen and official like this soon makes himself indispensable.

Conclusion

Let me, in closing, reiterate what was stated in different terms earlier in this address—that the great conception behind all true public health activity should always be constantly in the health worker's mind: First, a community—his field of activity, completely sanitated and safe. Second, a commonwealth—his State thoroughly aroused to the necessity for adequate health protection. Third, a nation—his country, freed as far as it is humanly possible, from all forms of preventable disease, with all its human resources unimpaired and ready for the helpful and glorious part that that country should play before the world.

Correspondence

Tissue Diagnosis in the Operating Room. And Immediate Cover-slip Examination of all Fluids and Pus.

Baltimore, Md.,
February 3, 1927.

To the Editor:

I will consider it a courtesy if you will publish this letter in your journal, as I am anxious to come in correspondence with pathologists and surgeons interested in the immediate examination, by frozen section, of tissue in the operating room and the immediate cover-slip studies of smears from all fluids and pus.

Microscopic examination of stained frozen sections has been possible for more than a quarter of a century. The staining of unfixed frozen sections with polychrome methylene blue and other stains is a well-established procedure. In many operating rooms in university and other large and small surgical clinics, provisions for these immediate diagnostic studies have not only been available, but have been in practical use for years. While, unfortunately, on the other side, this diagnostic part of the operating room is conspicous by its absence in many clinics.

Before 1915 it was rarely necessary for a surgeon well trained in gross pathology to need a frozen section to help him in diagnosis at the operating table. Since 1915, and especially since 1922, the public has become so enlightened that malignant disease formally easily recognized either clinically or in the gross, now appears in our operating rooms devoid of its easily recognized clinical and gross appearance and can only be properly discovered by an immediate frozen section. The majority of operating rooms are not equipped or prepared for this new diagnostic test.

The first essential part for this diagnosis is the technician—one to cut and stain the frozen section, or to make and stain the smear. The second is a pathologist trained to interpret it. It is possible for the surgeon to be all three in himself, and some young surgeons are so equipped. In others it is a dual combination —surgeon and pathologist in one, and the technician. More frequently it is three—operator, technician and pathologist. It makes little difference whether it is one, two or three individuals, providing each has the equipment and training for this most difficult diagnostic test.

In the address as chairman of the surgical section of the Southern Medical Association, I discussed biopsy, and this paper has been published in the *Southern Medical Journal* for January, 1927 (Vol. XX, page 18.) A reprint of this paper will be sent to anyone on request. The chief object of this letter is to come in contact with surgeons and pathologists who are sufficiently interested in this problem to discuss it either by correspondence, or by attending a meeting in the surgical pathological laboratory of the Johns Hopkins Hospital, either the Monday before, or the Friday after the meeting of the American Medical Association in Washington.

Schools for technicians may have to be established in different sections of the country, and the surgical pathological laboratories of the medical schools and the larger surgical clinics should offer courses in this tissue diagnosis, so that surgeons may learn to become their own pathologists, or pathologists learn the particular needs of the surgeon in tissue diagnosis in the operating room.

It is quite true that when the majority of the public are fully enlightened, the surgeon will see lesions of the skin and oral cavity and the majority of subcutaneous tumors when they are so small that that their complete excision is not only indicated, but possible without any mutilation. The chief danger here will be a surgical mistake—the incomplete removal of an apparently innocent tumor. There is no necessity here for biopsy. If a proper local excision is done, no matter what the microscope reveals, that local operation should be sufficient. But when lesions of the skin, oral cavity and soft parts are extensive and their complete radical removal mutilating, then there must be biopsy to establish the exact pathology.

In tumors of the breast and disease of bone, for years, the diagnosis could be made clinically, or from the gross appearances at exploration. But now, in an increasing number of cases, the breast tumor must be explored, and the gross pathology of this earlier stage is not sufficiently differentiated to allow a positive diagnosis. Immediate frozen sections are essential to indicate when the complete operation should be done. The same is true of the earlier stases of lesions of bone. The X-rays no longer make a positive differentiation between many of the benign and malignant diseases, for example, sclerosing osteomyelitis and sclerosing osteosarcoma.

We must not only specialize in tissue diagnosis, but we must organize this department so it will function properly in as many operating rooms as possible in this country.

Then there is a final and most difficult question to consider. I doubt if it can be settled. What shall be done in those operating rooms in which there is no technician to make the sections and no one trained to interpret the microscopic picture? How can a piece be excised or a tumor removed, for example, from the breast, and this tissue sent to some laboratory for diagnosis without incurring the risk of the delay to the patient? I have discussed this point in my paper on biopsy.

JOSEPH COLT BLOODGOOD, M. D.,
Surgical Pathological Laboratory,
Johns Hopkins Hospital.

Miscellaneous

An Appreciation of Lawrence Roane Waring, M. D.
1826—1869.
Being Some Brief Notes on the Life and Medical Practice of a Virginia Physician of Bygone Days.

By J. B. H. WARING, M. D., Blanchester, Ohio.

On a commanding knoll in Hollywood Cemetery, Richmond, hallowed ground where rest in eternal sleep so many of Virginia's illustrious dead, a tall slender obelisk points ever skyward, marking the spot where rests the mortal remains of a Virgina gentleman and physician of another day,—a physician who lived and had his being in the simple and unassuming way which is ever the hallmark of the truly great. A few yards away J. E. B. Stuart lies buried; and about in every direction Virgina's dead sleep in silence. The in-

scription on this monument tells us that it was erected by the poor of Richmond to the memory of a Doctor Lawrence Roane Waring, who had passed away in 1869 at the comparatively early age of forty-three. Yet, in this brief space of life, he left an impress on the life of Richmond that time has not worn away,—a life that should ever be an inspiration to the true physician.

A descendant of the Warings of Essex County, Virginia, Lawrence Roane Waring brought into his life the ideals of a long line of good Virginia citizens. He was born at "The Forge," near New Town, King and Queen County, Va., in 1826, the son of Horace and Isabella Roane Waring, to whom were born six children. Of his early life not much information is available nearly a hundred years later; but we know that he graduated at the University of Virginia in 1846 at the age of twenty, and began practice in Richmond. The Warings of that day were, in general, well-to-do planters, so that it is not likely a great deal of financial struggle and hardship entered his life at this stage. He was very devoted to his mother, and the story is that on her death-bed he promised to devote his professional life to relief of sickness and suffering amongst the poor.

At the outbreak of the Civil War, he organized and commanded a company from King and Queen County, but it seems that his forte was not military brilliancy. Always rather eccentric, he apparently did not take kindly to the restrictions of military life, or lacked the ability to discipline troops; so that his career as a military line officer did not compare, for instance, with that of his doctor kinsman from Essex, Captain William Latane, M. D., whose tragic death and burial has been immortalized in Southern annals in the poem and the painting, "The Burial of Latane." At any rate, after a few months Dr. Waring was relieved from duty with troops and placed in charge of one of the military hospitals in Richmond, where his professional services were very creditable throughout the remainder of the War. After the War was over, he resumed his practice in Richmond until he died in 1869, an early victim to nights and days of over-work amongst his beloved poor. The good doctor is reputed to have never sent a bill or asked payment for his services; and no call for his services went unanswered night or day. On his death-bed, he gave instructions that his books should be burned so that no bill could ever be sent to any of the poor he had ministered to.

In this day and age, when the economic urge, so-called, makes it practically necessary for the successful physician to conduct his professional practice on sound business lines, we are unable to comprehend the life and conditions of this good doctor. He never married; and apparently his wants and needs were few and simple. His income, whatever it was, seems to have been sufficient to maintain his modest office on Franklin Street in the old Richmond. We are told that when he required a new suit of clothes and went to a tailor shop to purchase, he would receive the suit all right, but would not be allowed to pay for same. Likewise, when his many patients and admirers saw that his faithful horse was about worn out with the labors of the day, straightway they would get together and present him with a fresh one. In this way he kept going on his professional rounds until one day in the year 1869 he laid down on his bed to rest, and arose no more. After his untimely death, Dr. William Wallace Gordon fell heir to most of his large practice, and, in turn, also died comparatively young, a victim of the same overwork.

Through the courtesy of Mrs. Charles LeLon, of Richmond, whose mother's people were patients of Dr. Waring's, we are able to quote a newspaper account of Dr. Waring's funeral, found pasted in an old family Bible.

"Funeral of Dr. Waring—Touching Scenes.

"Seldom have we witnessed more touching scenes than have followed the death of Dr. L. R. Waring. We have before spoken of the crowd of persons besieging all day Saturday and Sunday the room on Franklin Street, where his mortal remains are laid out, and of the spontaneous, heartfelt tributes of the mourners to his worth.

"A similar scene was presented on Sunday when the remains were followed by a procession of hundreds, in carriages and on foot, from the office to the church, and from the church to the cemetery, although a keen, cold wind was blowing, and the clouds of flying dust almost cleared the streets of other persons. The funeral took place at St. John's Church. The house was crowded to overflowing, while many were unable to gain admis-

sion. Rev. Harry Wall, the rector, read the burial service of the Episcopal Church, and made a few eloquent remarks, affecting to tears many in the immense congregation.

"As the hearse moved off, one hundred and five carriages joined the procession, and a large number of people, representing all classes of our population, took places in line on the sidewalk. The coffin was literally buried in flowers; and the Doctor's favorite horse, led in the procession, was also covered with floral decorations—the tributes of the poor.

"At St. Patrick's Church (Catholic) Rev. Father Hagan announced the death of Dr. Waring to his congregation, and requested the prayers of the people for the soul of the deceased. Here, too, much feeling was manifested, showing that the regret at the demise of this useful man is not limited to any particular sect or class, but is universal."

In this simple newspaper account, we read at once a tribute to the man, and an inspiration to the Virginia doctors of the younger generations to take up and to carry on the work of our honored profession; so that, when the time comes for us one by one to be gathered to our Fathers, we will at least leave the impress of a good physician's life well—even fully—lived. More we cannot ask.

In the preparation of this brief, fragmentary account I wish to acknowledge my indebtedness to Dr. C. A. Bryce, Mrs. Charles LeLon, and Mr. W. L. Waring, of Richmond; Lawrence Waring, Esq., of Norfolk, Va., Roane Waring, Esq., of Memphis, Tenn., and to any others who may have assisted me in the work.

November 17, 1926.

Bibliotheca Obstetrica

Eustachius.

Eustachius (Bartholomaeus) [1520-74] Tabulae anatomicae, quas e tenebris tandem vindicatas et Clementis XI, Pont. Max., munificentia dono acceptas, praefatione notisque illustravit Jo. Maria Lancisius xliv, 115 pp., 47 pl.; 6 l. fol. *Amstelaedami, apud R. et G. Wetstenios*, 1722.

The first edition of these plates was brought out in Rome in 1714. They are the first anatomical illustrations to be made from copper plates. The plates were engraved by Eustachius himself and were completed in 1552. Over 150 years later, they were discovered in the Papal Library and were given by Pope Clement XI to his physician Lancisi, who at the instigation of Morgagni published them with explanatory notes. The Amsterdam edition was sponsored by Boerhaave and Albinus. Had these tables been published in Eustachius' life time, they would have made Eustachius a worthy rival of Vesalius as the Father of Anatomy. Eustachius studied the intimate structure of the organs by means of glasses and used such methods as injection and macer-

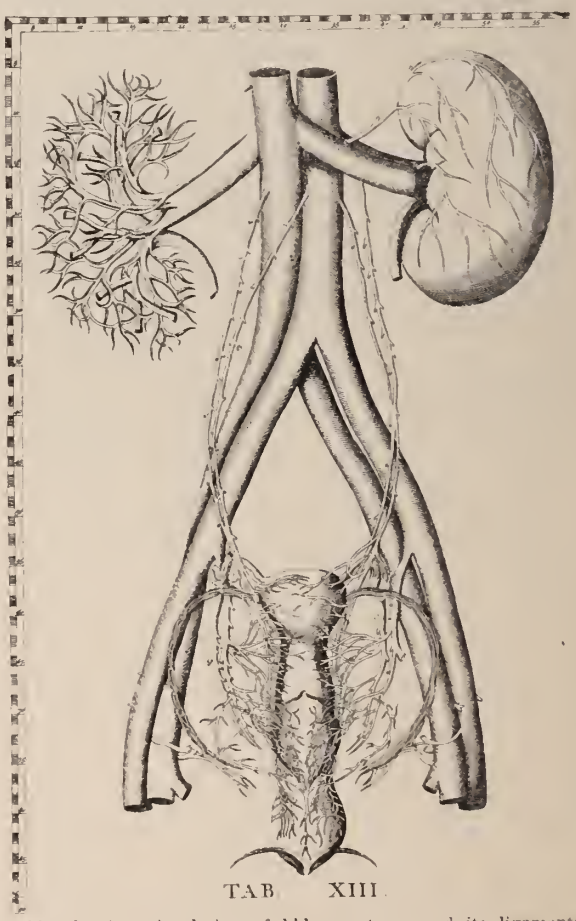


Table showing circulation of kidney, uterus and its ligaments, and bladder.

ation of tissue, and desiccation. Besides the tube and the valve which bear his name, he described the structure of the teeth, the suprarenal capsules, the throracic duct, the sixth cranial nerve, the clitoris and its crura. His is the first accurate description of the uterus, and he understood the structure and circulation of the round ligaments.

It is generally thought that Eustachius was born in 1520, but the elaborate festal celebra-

tion, held at his birthplace, San Severino nelle Marche, near Salerno, in September 1913 under the patronage of the Minister of Public Instruction, throws some doubt on this date. The festival lasted the greater part of the month and consisted among other things of a three day congress of medical men of the district, in which many of the leading men of Science in Italy took part, the unveiling of a marble statue in the Cival Hospital and a bronze bust by Ercole Rosa. The City of Rome, according to the news item of the time in the *British Medical Journal* (Two Notable Anniversaries, *Brit. M. J.* 1913, ii:1171) is to affix a marble tablet to the anatomist's house in the Piazzo SS. Apostoli (it is now the Palazzo Guglielini). Little is known about the life of Eustachius. He began his professional career as private physician to the Duke of Urbino. He knew Latin, Greek and Arabic well, was physician to Cardinal Borromeo and also Cardinal Guilio della Rovere whom he accompanied to Rome. After the death of Columbus he was chosen professor of Anatomy at the Sapienza, which had been reorganized as the Roman University. He died in 1574, when he was on a journey to Fossombrone, whither he had been summoned to the sick bed of the Cardinal.

Besides the attractive title page which shows the new form of dissecting room, and a dissecting table that has four half circles cut out of it, so that the operator can approach more closely to the subject, the Amsterdam edition is interesting bio-bibliographically because it is associated with so many well known names. Eustachius made the plates, Pope Clement XI gave them to Lancisi who published them in Rome with explanatory notes. Boerhaave and Albinus brought out the Amsterdam edition. The preface contains a letter from Fantoni, Professor of Anatomy at Turin, another from Morgagni, a testimony from Carolus Majellus, the Librarian of the Pope, a note by Lorenz Heister, besides a poem to Eustachius by Pierre Pini and an epigram by Franciscus Soldatus. My own particular copy is further interesting in that it was presented in 1868 by a Homeopathic doctor to the noted medical hymn writer, Dr. Abraham Coles, "in acknowledgment of the high geninus of the Author of the Microcosm, the Medical Odyssey, a glorious Poem."

M. P. R.

Woman's Auxiliary Medical Society of Virginia

At the request of the officers of the Auxiliary, this space has been set aside for communications from them regarding matters of interest, both to the profession and to the women members of their families.

All communications should be addressed to Mrs. E. F. Truitt, Secretary, Westover Avenue, Norfolk, Virginia.

On to Washington!

In persuance of our President's message in the January issue of the VIRGINIA MEDICAL MONTHLY, "Why a Woman's Auxiliary." It appears that some of us are not sufficiently interested in our husband's profession—to say nothing of contributing to the relief of suffering humanity. I am not speaking of those counties which are already organized and doing splendid work, but of the vast majority of doctors' wives who never attend state conventions and whose counties are not organized. It seems that we would rather consume our time in extending club work, etc.

Why do we have to urge and entreat the Medical Auxiliaries to function, to get together and work out schemes for the betterment of mankind? Why does our appeal for more and better co-operation in state work not receive more support? We know the material is in Virginia as elsewhere; then why not organize or join your nearest unit and let the public know by your activities the good work that many doctors' wives are doing in their communities?

Our State Auxiliary works hand in hand with the National and the county units which form the state organization must function in order that the state organization may grow and spread its influence.

Where could we find a more earnest, self-sacrificing state president than our own Mrs. Southgate Leigh, of Norfolk, whose untiring efforts are an inspiration to each county president? We who attended the Norfolk Convention and saw the splendid work exemplified returned with renewed determination to further Auxiliary work in Virginia. We not only enjoyed the work reported by the different units, but we were delightfully entertained and enjoyed mingling together in the various social functions prepared for our pleasure.

Let's go to the National Convention in Wash-

ington! The American Medical Association meets there in May. It is at the American Convention that the states receive the spirit of rivalry, and are inspired to greater achievement. Let us increase our efforts now, during the next two months, in order that our president will be enabled to make a favorable report for Virginia.

FLORENCE STARRITT HUGHES,
(MRS. T. J. HUGHES),
Press Chairman.

Roanoke, Va.

The Truth About Medicine

In addition to the articles enumerated in our letter of December 27th, the following have been accepted:

Robert A. Bernhard
Saf-T-Top Mercurochrome Solution 2 c.c.
Kansas City Oxygen Gas Co.
Ethylene for Anesthesia (Kansas City Oxygen Gas Co.)
Eli Lilly & Co.
Erysipelas Streptococcus Antitoxin—Lilly (Concentrated Globulin)
Parke, Davis & Co.
Antistreptococcus Serum 20 c.c. piston syringe.
Antistreptococcus Serum 50 c.c. piston syringe.
Swan-Myers Co.
Arizona Ash Concentrated Pollen Extract—Swan-Myers; Crab Grass Concentrated Pollen Extract—Swan-Myers; Goose Grass Concentrated Pollen Extract—Swan-Myers; Mountain Cedar Concentrated Pollen Extract—Swan-Myers; Ox-Eye Daisy Concentrated Pollen Extract—Swan-Myers; Plantain Concentrated Pollen Extract—Swan-Myers; Yellow Fox-Tail Concentrated Pollen Extract—Swan-Myers.

NEW AND NON-OFFICIAL REMEDIES

Gynergen—Ergotamine Tartrate.—The normal tartrate of the principal alkaloid of ergot. Gynergen stimulates the motor nerve endings of the sympathetic division of the autonomic nervous system, thus causing an increase in blood pressure, contraction of the uterus, etc. It is proposed for use when the action of ergot to produce uterine contractions is desired. It is contraindicated when a tonic contraction of the uterus is undesirable. Gynergen is administered intramuscularly or hypodermically, and orally. The product is supplied in the form of Ampules Gynergen, 1.1 c.c. and Tablets Gynergen, 0.001 Gm. H. A. Metz Laboratories, Inc., New York.

Ampoules Glucose (Dextrose, U. S. P.) Lilly 10 Gm., 20 c.c.—Each ampule contains Dextrose, U. S. P., 10 Gm.; cresol 0.1 per cent and distilled water to make 20 c.c., buffered with sodium phosphate. Eli Lilly & Co., Indianapolis.

Ampoules Glucose (Dextrose, U. S. P.), Lilly, 25 Gm., 50 c.c.—Each ampule contains Dextrose, U. S. P. 25 Gm., distilled water to make 50 c.c., accompanied by an ampule containing 2 c.c. of a buffer solution. Eli Lilly & Co., Indianapolis. (Jour. A. M. A., January 8, 1927, p. 101).

Ethylene for Anesthesia.—It contains not less than 98 per cent by volume of ethylene. Trials on human subjects have confirmed the anesthetic and analgesic value of ethylene as demonstrated by animal experiments. Deep surgical anesthesia is stated to be produced easily, and analgesia comes on readily and apparently long before anesthesia is established. A considerable number of trials give promise that ethylene is of value for the production of surgical anesthesia and that it has advantages over nitrous oxide. Ethylene for anesthesia is supplied in compressed state in metal cylinders.

Ethylene for Anesthesia (Kansas City Oxygen Gas Co.)—A brand of ethylene for anesthesia—N. N. R. Kansas City Oxygen Gas Co., Kansas City, Mo. (Jour. A. M. A., January 29, 1927, p. 323).

PROPAGANDA FOR REFORM

The following products have been the subject of prosecution by the federal authorities charged with the enforcement of the Food and Drugs Act: Glycero-Celery Tonic (Brunswig Drug Co.), consisting of potassium bromide, glycerin, extracts of plant drugs, sugar, alcohol and water. T. S. B. Liverclean (C. M. and R. Tompkins), essentially Glauber's salts, Epsom salts, sugar and a trace of plant extract dissolved in water. Womanette (Capital Remedy Co.), consisting of potassium bromide, extracts of plant drugs (including sassafras), alcohol, water and a trace of a salicylate. Sirup of Ambrozoin (American Apothecaries Co.), consisting essentially of ammonium chloride, sodium and potassium bromides, small amounts of plant extracts, a trace of creosote, benzoic acid, alcohol, sugar and water. Angelus Compound Sirup of Hypophosphites (Brunswig Drug Co.), consisting of sodium, iron, manganese, quinine and strychnine hypophosphites, traces of calcium and potassium salts, glycerin, sugar and water. Brunswig's Compound Fluid extract Buchu (Brunswig Drug Co.), consisting essentially of potassium acetate, extracts of plant drugs, glycerin, alcohol and water. Allen's Lung Healer (H. J. Allen Co.), a partly emulsified mixture of mineral oil, about 30 per cent, volatile oils, including anise oil, about one-half of 1 per cent, extracts of plant drugs, including licorice, sanguinaria, benzoic acid, sugar and water. Whitlock's U-GR-GL (Cherokee Remedy Co.), essentially a dilute, watery solution of washing soda flavored with menthol. (Jour. A. M. A., Jan. 1, 1927, p. 48).

The Lead Treatment of Cancer.—At a recent meeting of the British Medical Association, a full summary of the results to date was presented by members of the staff of the Liverpool Medical Research Organization The clinical survey indicates that there is promise of therapeutic benefit in a few selected cases of otherwise hopeless cancer. The preliminary task before treatment can be begun is the selection of patients who may possibly obtain benefit. The lead suspension which Blair Bell uses contains fairly fine particles, some of which are metallic lead, and some lead hydroxide and lead carbonate. The mixture is more toxic than pure colloidal lead, but it is also more effective in the destruction of tumors. Commercial products are not as yet available, but several laboratories in this country and in England are experimenting with various preparations, hoping soon to be able to develop a standardized and reliable product. It seems that Blair Bell has shown that when employed under cited limitations and by those who possess proper laboratory facilities and clinical experience, lead therapy offers to a small number of persons affected with inoperable tumors, a chance to escape the consequences of the disease. But before any widespread use can be made of the method, some

means of removing lead from the body to control acute or chronic poisoning should be developed. The whole situation is thus frankly in the experimental stage. To carry out the treatment at all, requires hospitalization of the patient for some months, laboratory and clinical facilities not everywhere available and funds for frequent transfusions. It seems improbable that the method will ever replace surgery or compete with irradiation, but it has already accomplished something in patients in whom one or both of these procedures had failed. (Jour. A. M. A., Jan. 8, 1927, p. 103).

Nonspecific Protein Administration.—The intravenous injection of typhoid vaccine with an initial dosage of fifty millions, each subsequent dose increased by one hundred millions, and given at four-day intervals, is one of the most reliable means of producing fever. It is a drastic measure and one should be certain that the patient's vital organs are sufficiently healthy to withstand the attacks of fever thus produced. The intramuscular injection of milk skimmed by centrifugalizing and sterilized by boiling in the water bath for ten minutes, has good pyogenic properties without great toxicity. The usual dose is 5 c.c., gradually increased to 10 c.c. With those who have a tendency to strong febrile reactions, small doses should be given at first. The injections must be adjusted to avoid severe reactions and anaphylactic shock. (Jour. A. M. A., Jan. 8, 1927, p. 119).

Kloron.—Qualitative tests made in the A. M. A. Chemical Laboratory indicate that Kloron Tablets (J. I. Holcomb Mfg Co.), contain Chloramine—U. S. P. as their potent ingredient. The claims made for the preparation are typical of the extravagant exploitation of official products by the "patent medicine" route. (Jour. A. M. A., Jan. 8, 1927, p. 119).

Sodium Bromide Intravenously.—Sodium bromide may be injected intravenously provided the liability of such an injection causing colloidoclastic shock is reckoned with. It seems, however, that mere "gastric distress" would call for better dilution of the dose given by mouth, as with a tumblerful of milk, or for introduction by way of the rectum, rather than intravenous injection. (Jour. A. M. A., Jan. 8, 1927, p 120).

Cass Treatment for Rheumatism.—One hundred and thirty-seven West Sixty-Second Street, Chicago, houses a choice line of quackery. Under the names "Western Medical Association" and "Vernon Laboratories" a fake "epilepsy cure" is exploited on the mail order plan. Under the name "Cass Laboratories," nostrums for rheumatism, sciatica, neuralgia, lumbago and gout are sold—also through the United States mails. The A. M. A. Chemical Laboratory reports that the "Cass Treatment" consists of pink tablets, "Special Saline Compound" and gray tablets. The Laboratory found the pink tablets to contain 0.6 Gm. of sodium bicarbonate per tablet. The "Special Saline Compound" was found to be essentially flavored magnesium sulphate. The gray tablets were found to contain essentially 0.16 Gm. acetylsalicylic acid, 0.13 Gm. cinchophen and 0.3 Gm. charcoal per tablet. From the Laboratory's report it is seen that this wonderful discovery "developed under the direction of the Head Professor of Chemistry at one of the nation's largest Universities," and declared by "two of the foremost medical scientists in this country" to be superior to anything else in its line, is merely a combination of acetylsalicylic acid and cinchophen with sodium bicarbonate and magnesium sulphate. (Jour. A. M. A., Jan. 15, 1927, p. 189).

Physical Therapy and Pseudophysics.—Much of the literature on physical therapy has apparently been written with an eye to the royalty statement or the publicity returns rather than to the possibility of scientific criticism. These treatises become impressive, in size, at least, by the inclusion of statements on the physics of the apparatus culled almost in toto from the advertising and descriptive matter published by a manufacturer. This practice might be commendable if the physical concepts were not often wholly at variance with the concepts generally accepted by physicists. The physician who desires a substantial knowledge of physical therapy must choose his sources of information carefully. (Jour. A. M. A., Jan. 15, 1927, p. 175).

Diamel in Diabetes.—Diamel tablets are manufactured by the Maltbie Chemical Co. They are stated to contain "Lithium Carbonate 1½ grs.; Sodium Arsenate 1/20 gr.; Strychnine Arsenate 1/180 Gr.; Ext Jambul Seed, ½ gr.; Ext. Gentian, ½ gr." The product is marketed with the claim: "This tablet is employed for the reduction and elimination of sugar in the urine, which it is said to do rapidly. A trial will speedily prove the efficiency of this formula." None of the components of Diamel tablets have any specific effect on the course of diabetes. (Jour. A. M. A., Jan. 22, 1927, p. 267).

I-on-a-co—The Magic Horse Collar.—California was not satisfied when it gave us the greatest piece of quackery, the electronic reactions of Abrams. Now we are treated to another piece of electrical hocus-pocus which comes from California: I-on-a-co, alleged to have been invented by one Gaylor Wilshire, and exploited by the I-on-a Company, of Los Angeles. The device, one gathers from the advertising, will cure cancer, Bright's disease and paralysis, change gray hair back to black and give girls who use it a "permanent wave." A committee which investigated the device, reported that I-on-a-co is simply a coil of insulated wire about eighteen inches in diameter, with a plug that permits the coil to be attached to an electric light socket. There is also a smaller coil that plays no part in the alleged curative use of the I-on-a-co, but plays an all-important part in the magical features of the scheme. This coil has its two ends attached to a miniature light socket containing a small flashlight globe. When the larger coil is plugged into an alternating current electric light socket there is, of course, generated within the large coil a weak fluctuating magnetic field. This will cause the globe in the small coil to light up when it is brought in close proximity to the large coil. This phenomenon, while elementary to a degree, furnishes for the uninitiated that element of mystery which is so necessary to the successful exploitation of any alleged cure for human ailments. The I-on-a-co is used by placing this magnetic horse collar over the neck, around the waist or around the legs of the person who thinks he is going to be helped by a piece of buncombe of this sort. (Jour. A. M. A., Jan. 22, 1927, p. 262).

Sale of Ultraviolet Generators to the Public.—The Council on Physical Therapy, on the basis of the available evidence, contends that the sale of generators of ultraviolet energy to the public for self-treatment is without justification. The Council bases its condemnation of the sale of such apparatus on the ground that harm may result from such use by the public; because unwarranted confidence in the therapeutic value of treatment with such apparatus may lead to attempts to treat serious conditions; because the possessor of such apparatus would fail to obtain a correct diagnosis of his condition, and because the practice would encourage the sale of useless and fraudulent apparatus. (Jour. A. M. A., Jan. 22, 1927, p. 245).

Virginia Medical Monthly

FOUNDED BY LANDON B. EDWARDS, M. D., APRIL, 1874.
OWNED BY THE MEDICAL SOCIETY OF VIRGINIA.
PUBLISHED BY THE PUBLISHING COMMITTEE.

A. G. BROWN, Jr., M. D., Chairman, Richmond, Va.

B. R. TUCKER, M. D., Richmond, Va.
P. W. HOWLE, M. D., Richmond, Va.
E. L. KENDIG, M. D. Victoria, Va
A. L. GRAY, M. D., Richmond, Va.

ALEX. G. BROWN, Jr., M. D., Editor.

AGNES V. EDWARDS, Business Manager and Secretary-Treasurer.

All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $2.00 per annum in advance.
Single Copies 20c.

VOL. 53. MARCH, 1927 No. 12

Editorial

The Electrocardiograph.

The electrocardiograph is not an instrument for detecting valvular heart lesions, as such. There is no characteristic tracing of a mitral stenosis, a mitral regurgitation; of an aortic stenosis or aortic regurgitation. It does not record in any manner auscultatory phenomena of the heart. It does not denote the presence of a murmur or a bruit. It does not indicate the quality, time relation, or absence of heart sounds or heart murmurs. These physical factors of heart operation which are so valuable in physical diagnosis remain in the domain of auscultation.

It is only when cardiac muscular phenomena are to be investigated and recorded that one turns to electrocardiographic tracings. In the display of these important events, as disclosed in the cardiac cycle, the cardiopathic examination may be considerably added to by a proper interpretation of the tracings of the three leads of the electrocardiogram. The widespread use of the electrocardiograph is reason enough for a brief comment upon its tracings at this time. But it must not be taken to be a method that will ever supplant the ancient and honorable physical examination—by inspection, palpation, percussion and auscultation. Nor can it ever be used as a substitute for a discriminating judgment in dealing with cardiac disorders. There is reasonable basis for the position that the expert in physical diagnosis, well seasoned in practice and grounded, by contact with a large number of heart patients, in the knowledge resulting from an imperious urge of cardiac symptoms, will always be the court of surest resort, if ever a choice between the skilled clinician or the pure electrocardiographer arises. The fact is that, in our opinion, no electrocardiographer or cardiologist, as such, is best fitted to diagnose and treat the cardiopath, unless such a specialistic limitation is founded upon a wide experience in general medicine. In fact, a heart specialist can never get away from general internal medicine if he is to be the best sort of a heart specialist.

Sir Thomas Lewis may be taken as a foremost worker in electrocardiography. His published work upon this subject should be read carefully. His little book, published in 1913, entitled "Clinical Electrocardiography" is a careful and succient exposition of the subject. He wrote then that electrocardiography "is a direct means of examining the all essential heart muscle", and this may be considered the function of electrocardiography in heart studies. By its use, one may analyze common heart muscle disturbances and determine the mechanism of disordered heart action. The observation that an electrocardiographic study is rarely superfluous will not be questioned, because every added inquiry that may enable one to more nearly understand the nature of cardiac disturbance is desirable.

The use of the letters *P*, *Q*, *R*, *S*, *T*, in expressing component elements of the physiological heart beat, is an arbitrary one and was used first by the Dutch physiologist, Einthoven. The auricular contraction, or the contraction of the auricles, is marked by the upward and downward tracing P, terminating at the zero line. The underswing of this tracing or deflection denotes the first phase of the ventricular complex. This is Q. But it is not always present. Following this a steep, tall pointed summit and a precipitate decline, known as R, depicts a marked ventricular action. This is followed by a depression below the zero line; another expression of ventricular systole is denominated S. The contraction of the ventricle continues in evidence on the electrocardiogram, in a broad round summit T, which terminates the systole and marks the beginning of diastole.

Lewis says that P, the auricular representative, is found as a summit in all normal and young adult subjects and in all leads. There

are some minute variations in the summit, sometimes a bit horizontal or dipping, occasionally bifid. These P forms express the origin of the heart beat at the normal site and the passage of the "contraction wave through the whole of the auricular tissue in definite directions." This is the physiological auricular complex, so-called.

The physiological ventricular complex varies very much, but the deflection R and T are always present in it. Q and S may be absent. Amplitude and shape of deflections may vary in R, Q and S; and T may vary in direction.

If Q, R and S followed by a slow blunt T are found, the indication is that the ventricular contraction arises from fixed points and is propagated along the auriculo-ventricular bundle, to its main divisions and branches. Variations of the form and height of deflections of the electrocardiogram are found in normals.

There are three "leads." These leads are three directions of conducting the current which is Einthoven's modification of Waller's ten leads.

Lead I represents current being led from right hand to left hand. Lead II represents the currents being lead from right hand to left foot and Lead III from left hand to left foot. The first two leads are expressive particularly of contractile phenomena about the base of the heart: the auricles and upper part of the ventricle; lead III is expressive best of contractile phenomena of the right and left ventricles.

In all leads the R curve is marked but it is most prominent in II and T wave is directed upward from the base line, but Q and S are inconstant, even in normal electrocardiograms. Much more may be said of the variations of physiological electrocardiograms, but this is not the place for it. Comments that have been made are elementary in the extreme and are made merely to offer a hint of the nature and meaning of the electrocardiogram and to suggest inquiry into the meaning of this method of diagnosis, as well as to a clearer understanding by the general practitioner of electrocardiographic tracing of heart disturbances so frequently seen in publications of today.

Electrocardiopathic Nomenclature.

Studies of electric phenomena registered by a galvanometer string in heart contractions have produced a new and individualistic group of terms. Heart phrases, commonly used in inspection, palpation, percussion and auscultation of the heart, are rarely employed. A nomenclature and glossary quite limited as to electrocardiography has been acquired and it is worth while for one to obtain a knowledge of the terms used in electrocardiography if one wishes to read, to say the least, publications on the subject.

A few terms may be used to illustrate:

Relative Preponderance of Right and Left Ventricular Muscle is demonstrated, in association with valvular disease and compensatory hypertrophy, by rather characteristic changes in deflections of the R wave in the three leads.

Inversion of T is considered pathological in leads I and II. It is here an "ill omen". Aberrant contractions are contractions which are propagated from super-ventricular impulses. They choose abnormal channels of passage. Auriculo-ventricular heart block, partial and complete, denotes a state of interruption of passage in proper time and sequence of auricular contraction to ventricle. The auricular and ventricular contractions may beat simultaneously, giving what is called nodal rhythm.

Premature contractions and extra systoles are brought out often in electrocardiograms. These are abnormal contractions springing from some other than the normal pace-maker or sino-auricular node. These beats are said to be *ectopic*. Simple paroxysmal tachycardia, auricular flutter, auricular fibrillation are a few additional states of cardiac disturbances which have special phraseology in the electrocardiogram. The electrocardiogram in valvular lesions of the heart has nothing to do with the auscultatory features of diagnosis, but may assist in portraying cardiac muscle development and functional action.

News Notes

Tri-State Medical Association of the Carolinas and Virginia.

At the twenty-ninth annual session of this Association in Columbia, South Carolina, February 15 and 16, there was an attendance of more than three hundred. Dr. Robert Wilson, Jr., of Charleston, South Carolina, was elected President; Dr. F. C. Rinker, of Norfolk, Dr. W. B. Lyles, of Spartanburg, Dr. Wm. deB. MacNider, of Chapel Hill, were elected vice-presidents. Dr. James M. Northington, of Charlotte, was elected secretary.

Dr. L. T. Price, of Richmond, was made a member of the Council to fill the vacancy left by the death of Dr. H. S. Belt, of South Boston. Dr. R. L. Payne, of Norfolk, was made a member of the Council for a period of three years. Virginia Beach, Virginia, was selected as the next meeting place, with headquarters in the new Cavalier Hotel.

In response to a suggestion in the Presidential Address of Dr. A. J. Crowell that the annual session be made longer than a two-day period, the matter of extending the next session through a four-day period was left to the discretion of the Council.

Conference of Virginia Public Health Workers.

During the week of February 14th to 19th, there was held in Richmond an institute for conference and training of the public health workers of the State. The groups and organizations participating were the staff and field workers of the State Board of Health, the Virginia Public Health Association, the Virginia Section of the Society of American Bacteriologists and the Virginia Tuberculosis Association.

The Conference was opened by an address on the "Fundamentals of Public Health" by Dr. Ennion G. Williams.

A number of professional men and women of national prominence took part in the program along with those in Virginia who are making public health history. Most of the phases of public health practice were dealt with profitably at this institute which was generally voted the best yet held.

That a conference of State health workers should be able to attract such a large number of distinguished specialists is a fine commentary on the public health work being done in this State. The visitors without exception paid tribute to the high quality of Virginia's contribution in the public health field.

The Virginia Public Health Association

Held its annual meeting in Richmond, February 16th, during the Conference of Public Health Workers of the State. Dr. R. W. Garnett, Danville, the president, presided and gave a most interesting address. A number of other excellent papers and talks were given. The one by Dr. Henry F. Vaughan, health officer of Detroit, on the procedure for conducting a thorough anti-diphtheria campaign in a large city, probably aroused the greatest discussion. This was followed by a clinic at one of the city schools.

Following a discussion on the question of a suggested state-wide milk ordinance, the Association adopted a resolution approving a minimum dairy standard for all milk sold in this State, but felt that no action taken by the State should limit the right of cities to maintain higher standards.

The following officers were elected for the ensuing year: President, Dr. Louis L. Williams, U. S. Public Health Service; vice-presidents, Dr. C. B. Ransone, health officer of Roanoke, and Miss Anne Gulley, public health nurse in Loudoun County; secretary-treasurer, Dr. P. S. Schenck, health officer of Norfolk. Dr. Schenck was also appointed representative to the American Public Health Association.

Virginia Tuberculosis Association.

During the Conference of Virgina Public Health Workers in Richmond, the middle of February, the Virginia Tuberculosis Association also held its annual meeting under the presidency of Dr. Charles R. Grandy, of Norfolk. In addition to the business meeting and papers by members, an address, open to the public, was given in the evening, by Dr. Linsly R. Williams, managing director of the National Tuberculosis Association, on the work of that association and its affiliated state and local branches.

Dr. R. A. Martin, health officer of Petersburg, was elected president for the coming year and Dr. R. K. Flannagan, Assistant State Health Commissioner, was re-elected secretary of the Board. At a meeting of the Board, Miss Leslie Combs Foster was appointed executive secretary.

Dr. R. Cannon Eley,

Of the class of '25, University of Virginia, Department of Medicine, will leave April the 1st for Willard Parker Hospital, New York City, where he will spend six months studying contagious diseases in children. Following this, he will go to "Children's Hospital" of the Harvard Medical School, Boston, Mass., where he will spend two years in the study of diseases of children under Dr. Kenneth D. Blackfan.

Foot-and-Mouth Disease Commission Gives Results.

The highly infectious nature of foot-and-mouth-disease virus, the extremely small size of its active agent, and its ability to escape

identification as to its true nature are the outstanding results of the year's study by the American commission which went to Europe in 1925 to study foot-and-mouth disease and is now preparing its official report, according to the U. S. Department of Agriculture.

Though highly technical, the findings of the commission show briefly that the virus of foot-and-mouth disease is extremely active and dangerous. It produced the disease experimentally when diluted as much as 1 part in 10 million. The organism is too small to be seen by the most powerful microscopes. The resistance of foot-and-mouth-disease virus to strong antiseptics also proved to be surprisingly great. Whereas 60 per cent alcohol kills ordinary bacteria within a minute it failed to destroy the virus of foot-and-mouth disease in 26 hours. The virus also showed abnormal resistance to other antiseptics, such as acetone, bichloride of mercury, and cresol. The commission reported that "foot-and-mouth disease is one of the most contagious diseases known."

It seems agreed that among animals the most effective and economical method of combating foot-and-mouth disease is by the slaughter and clean-up method, when limited to a small percentage of animals.

Civilization Not So Bad After All.

It has long been held that civilization has an ill effect upon the physical condition of primitive peoples, but an examination of the teeth of over 6,000 Bantu children living in Kraal villages of the Transvaal showed that less than 20 per cent of them were free from dental defects, while fully 45 per cent had at least mild physical defects due chiefly to malnutrition.

The Nansemond County Medical Society,

At its February meeting, elected Dr. Charles H. Dawson secretary to succeed Dr. C. F. Moriarty, who resigned when he accepted the position as health officer of Norfolk and Princess Anne Counties. Dr. Dawson is the new health officer of Suffolk and Nansemond County. At this meeting, interesting papers were read by Drs. J. E. Rawls, F. J. Morrison and W. C. Gibson. Dr. W. T. Gay, of Suffolk, is president of the Society.

Dr. William H. Parker,

Richmond, has been appointed a member of the electoral board of the City of Richmond.

Dr. P. D. Pence,

Of St. Charles, Va., recently visited relatives at Edinburg, Va.

Dr. H. Taylor Hawkins,

Of Clover, Va., has returned home after a visit to his parents in Richmond, Va.

Annual Report of St. Elizabeth's Hospital, Richmond.

The fifteenth annual report of this hospital for the year 1926 shows a large amount of interesting work accomplished. Sixteen papers were published in six different medical journals by members of the staff, eleven of which we take pleasure in announcing appeared in the MONTHLY.

The hospital cared for a total of 1,098 patients, with 1,625 out-patient visits. There were 856 operations, and 162 cystoscopies, and the total death rate was only 1.99 per cent. Laboratory examinations, not including routine gross and microscopic examinations of all specimens removed at operation, numbered 11,883. This report shows the diagnoses and operations for all cases and gives in the form of case reports a critical resume of the twenty-one cases which died.

Dr. H. L. Segar,

Of Warsaw, Va., was a recent visitor in Richmond, having come here on professional business.

Dr. W. E. Bundy,

Who has for the past nine years been associated with Dr. J. Louis McCarty at Berwind, W. Va., has recently moved to Minden, W. Va., where he is now physician for the New River and Pocahontas Consolidated Coal Company at that place.

School Hygiene and School Attendance in Egypt.

The chief medical officer of the school system in Egypt proposes to introduce during the current fiscal year the classification of elementary-school children according to intelligence, and special physical exercises for children who are not strong. The school physicians are also to fill out signed report cards on the health of each child. The minister of public instruction is planning to start compulsory school attendance, but estimates that it will take twelve years to make it completely effective.

Married.

Dr. John W. Wallace, Covington, Va., and Miss Irma Temple Robinson, of University of Virginia, in Richmond, February the 9th.

Dr. John L. Tabb, Richmond, Va., and Miss Emily C. Crockett, Max Meadows, Va., February 1st.

Dr. R. M. Shelton

Has moved from Valentines, Va., to Unionville, Va., where he has taken over the practice of Dr. J. P. Hankins.

Dr. Jacob S. Rosenthal,

Formerly of Norfolk, Va., after a year in New York engaged in post-graduate work, has opened offices at 1422 Massachusetts Avenue, Northwest, Washington, D. C., and is limiting his practice to urology.

Dr. H. M. Snead,

Of South Hill, Va., has gone to Petersburg, Va., where he has taken over the office and practice of Dr. F. J. Wright, until his return to Petersburg.

Dr. W. L. Varn,

Recently of Cumberland, Va., has moved to South Hill and taken up the practice of Dr. H. M. Snead.

The American Board of Otolaryngology

Announces that the following examination dates have been assigned:

May 16, 1927, at 9 o'clock, at the Episcopal Eye, Ear and Throat Hospital in Washington, D. C.;

June 4, 1927, at 9 o'clock, at Spokane, Wash.

Dr. Hanau W. Loeb, of 1402 South Grand Boulevard, St. Louis, Mo., is secretary of the Board.

Dr. Frank E. Handy

Announces that his post office is now Inman, Va., instead of Toms Creek, Va.

Dr. E. Chisholm Cobb,

Who has been located for some years at Penola, Va., has recently had completed a residence at Ruther Glen, Va., and moved into his new home just before last Christmas.

Have You Made Your Income Tax Return?

If not, it should be sent or carried to the office of the Collector of Internal Revenue for the district in which you live or have your principal place of business before or on March 15, 1927. Failure to make a return, with the specified net income, may subject the taxpayer to a penalty.

Physiotherapy and Occupational Therapy Aides Urgently Needed.

The U. S. Civil Service Commission states that a number of hospitals of the Veterans' Bureau are sorely in need of occupational therapy aides in arts and crafts, agriculture, and trades and industrial occupations, and also physiotherapy aides, pupil aides, and assistants. These workers are needed in considerable numbers in connection with the rehabilitation of disabled soldiers and sailors.

It is stated that examinations for these positions are now open. Full information and application blanks may be obtained from the U. S. Civil Service Commission, Washington, D. C., or from the secretary of the United States Civil Service Board at the post office in any city.

Dr. Booker E. Rhudy,

For several years a member of the staff of the George Ben Johnston Memorial Hospital at Abingdon, Va., has moved to Greensboro, N. C., where he has opened offices in the New Piedmont Building. He is limiting his work to roentgenology.

Dr. P. K. Graybill,

Of Fincastle, Va., who has been spending some time in Arizona, has recently been taking care of the emergency work at Lake Pleasant, Arizona, where a big dam is being built to store flood waters for irrigation of forty thousand acres of desert land.

Dr. Arthur L. Jones,

Formerly of southwestern Virginia, is now located at Gilbert, W. Va.

Ten Health Commandments.

Our readers, many of whom know Dr. B. B. Bagby, formerly of this State but now health commissioner of Athens and Clark County, Georgia, will be interested in the following ten health commandments which Dr. Bagby has had printed to be distributed in the county covered by his work:

1. Eat Wisely: Much milk, green stuffs, fruit and whole grain bread; little meat and sugar; avoid alcohol and stimulants.
2. Exercise Freely: Stand and sit erect.
3. Use Your Lungs: Breathe fresh air day and night. Stay in the sunlight a part of every fair day.
4. Be Clean: Wash your hands before you eat; bathe often; clean your teeth morning and night.
5. Feel Well: Don't get over-tired; rest is your best friend. A 30 minute nap in mid-day is not laziness but good sense.
6. Be Regular: Don't break your appoint-

ments with yourself for meals, sleep, and bowel movements.

7. Keep Your Balance: Hurry and worry serve no man. Play a little every day.

8. Keep Safe: Fight shy of the careless sneezer, spitter, the common drinking cup, and the home with open well or open toilet.

9. Don't Be Too Smart: When you are sick, go to bed and call a doctor. Few who do this promptly, die of pneumonia or flu.

10. Be Thrifty: Invest in an examination by a doctor and dentist on your birthday every year; it will pay dividends.

Rockbridge County Medical Society.

At the regular bi-monthly meeting of this Society held February the 1st, at Jackson Hospital, Lexington, papers were presented by Dr. Joseph Seebert on "Basal Metabolism: Methods", with the showing of apparatus, and by Dr. H. L. Mitchell on "Benefits of the Tonsil Operation: Review of Literature". The members of the Society were unanimous in their endorsement of the use of toxin-antitoxin for preventing diphtheria. Dr. E. P. Tompkins and Dr. H. L. Mitchell, both of Lexington, are president and secretary, respectively of this Society.

Thirty Thousand Miles of Child Welfare.

Wisconsin sends out a traveling children's clinic called the "Child Welfare Special," which visits rural communities remote from cities and hospitals. During the past five years this "Special" has traveled about 30,000 miles, visiting 70 counties of the State and examining 23,579 children. Most of the children were infants or of preschool age, and more than three-fourths of them were found to have preventable or remediable defects. The doctor and nurse of the "Special" give no medical treatment but provide the parents with records of the physical difficulties of their children and suggest that they be taken to the family doctor. This traveling clinic is very popular, and many requests are received from parents, teachers, and local officials for its return.

New Pavilion at Blue Ridge Sanatorium.

The George W. Wright memorial pavilion at the Blue Ridge Sanatorium, near Charlottesville, Va., has just been completed. The entire fund for the erection of this pavilion was raised through voluntary contributions from Masons in all sections of Virginia and the dedicatory exercises and formal presentation to the State by the Masonic Lodge will be made early in April. The pavilion is modern in all respects and has a total of twenty-eight wards with two beds to the ward, besides nurses' quarters and all necessary offices. This pavilion will be open at all times to Masons in good standing and the dependent members of their families. In case all beds are not used by the Masons, they may be used by others desiring to enter.

The Wise County Medical Society

Held its annual meeting in Norton, Va., the latter part of February at which time the members were guests of the Norton Medical and Dental Society. Dr. G. B. Setzler, of Norton, was elected president for the ensuing year, succeeding Dr. W. B. Barham, of Big Stone Gap. Vice-presidents are Dr. J. G. Bentley, Blackwood. Dr. W. B. Peters, Appalachia, and Dr. E. P. Cox, of Norton. Dr. C. B. Bowyer, Stonega, was re-elected secretary.

Sunbaths for Babies.

The gospel of plenty of sunshine for everybody, especially for children and most especially for babies, is being preached widely, and the Federal Children's Bureau has built a model which shows at a glance how sunbaths can be given to babies for the prevention and cure of rickets. This model will be loaned for use at child-welfare conference exhibits on application to the U. S. Children's Bureau, Washington, D. C.

Washington Meeting of the A. M. A.

Time is rapidly approaching for the Washington meeting of the American Medical Association. Meeting so near home, we should have a large representation from Virginia. The dates are May 16-20. The Registration Bureau, Scientific Exhibit, Moving Picture Theater, and Technical Exhibits will all be housed in the Washington Auditorium. The various sections will meet at places which will be announced on the program.

Dr. R. A. Vonderlehr,

Formerly of Richmond but now with the U. S. Public Health Service, announces that his address is now care the United States Quarantine Station, Rosebank, Staten Island, New York.

Dr. J. McCaw Tompkins,

Richmond, has been elected a member of the Board of Governors of Westmoreland Club, this city, for the ensuing year.

Mental Hygiene Service for Children in New York.

An entire floor of the main building of the New York State Psychiatric Institute and Hospital will be devoted to the observation and treatment of children who are retarded mentally or show mental disturbance. There will be schoolrooms, workshops and playrooms for children of both school and preschool age. The institution is to be built on Riverside Drive, New York City, and will specialize in the prevention and treatment of mental diseases and in psychiatric research and teaching.

Dr. and Mrs. J. H. Crouch,

Who have been working with the James City County Health Unit, with headquarters at Williamsburg, Va., have gone to Fort Worth Texas, where Dr. Crouch will continue in health work.

"Why Is He Not Even Accorded a Hearing?"

This is the question asked in an editorial in the *Richmond News Leader* with regard to the charges made by Dr. W. Armistead Gills against the medical administration of the United States Navy. The editorial states that every man who has charges to bring should be accorded a hearing when he is criticizing a sysstem, not for personal gain but for the benefit of a large number who are not in position to offer protest. "Why is he not accorded a hearing?" Why should not those in power wish to get the other man's point of view?

Dr. Lawrence T. Royster,

Professor of pediatrics at the University of Virginia, read a paper on "Malnutrition in Children" before the Norfolk County Medical Society, February the 28th.

Dr. William G. Smith,

Of the class of '25, Medical College of Virginia, has completed his internship at Uniontown Hospital, Uniontown, Pa., and has located at Wendell, N. C.

Georgia is Fighting to Prevent Diphtheria.

The Medical Association of Georgia cooperated with the United States Public Health Service in giving diphtheria toxin-antitoxin to more than 25,000 school children within the last two months of 1926. In at least one militia district in the State every child under 10 years of age was immunized.

Dr. Robert P. Cooke

Recently resigned his connection with the Accomac County, Va., health unit, and has gone to Lexington, Va., to be in charge of the health unit just organized to include Lexington and Rockbridge County.

Dr. Fred J. Wampler, for the past fourteen years a medical missionary in China, has taken charge of the health unit in Accomac County.

Georgians Further Honor Crawford W. Long.

We note in the *Fulton County Medical Bulletin* that a prize to be known as the Crawford W. Long Memorial Prize for Research Work is to be given yearly for the best piece of original work of merit accomplished by any member in good standing of the Medical Associatian of Georgia. This is given by a donor interested in stimulating scientific research work in medicine in Georgia, aad may be in any branch of medicine. Competition for this prize comes up for the first time at the next annual meeting of that State association in May, 1927.

Dr. C. S. Lawrence,

Of Winston-Salem, N. C., was elected president of the North Carolina State Health Association at its 1927 meeting.

Dr. A. W. Lewis,

Of Aylett, Va., was in Richmond, early in February as a delegate to the Conference on Higher Education.

Dr. Walter C. Klotz,

Formerly at Blue Ridge Sanatorium, this State, and later connected with the National Military Hospital, at Johnson City, Tenn., resigned the latter part of 1926 and returned to New York City, where he is connected with the Clinic of the Cornell University Medical College.

Honor Veteran Physician.

Sixty-one members of the Norfolk County Medical Society gathered at Monticello Hotel, in that city, February 24th, for a dinner to honor Dr. R. S. Perkins, on the occasion of his fifty-fifth anniversary in the practice of medicine. Dr. Perkins, who was graduated from a homeopathic school in 1872 was, on this occasion, made an honorary member of the Norfolk County Medical Society. Following an acknowledgment of this honor by Dr. Perkins and some remarks as to the many changes which had taken place in Norfolk since he located there, talks were made by Drs. Israel Brown, W. L. Harris, Frank Hancock, Eugene Lowenberg, S. A. Sutton, E. E. Feild, and W. L. Driver. Dr. J. Warren White, president of the Society, presided.

Dr. and Mrs. G. B. Barrow,

Of Clarksville, Va., have returned home after a short visit to Richmond.

The South Carolina State Medical Association

Is to hold its annual meeting at Anderson, April 19, 20 and 21, under the presidency of Dr. George H. Bunch, of Columbia. Dr. E. A. Hines, Seneca, is secretary.

Dr. C. E. Foley,

Formerly of this State but more recently of Raleigh, N. C., has located in Washington, D. C., with offices in the Medical Science Building. He is limiting his practice to diseases of the eye, ear, nose and throat.

The Southwestern Virginia Medical Society,

Which will meet in Pulaski, Va., March 24 and 25, under the presidency of Dr. Z. V. Sherrill, of Marion, gives promise of being interesting and pleasant as are all of these meetings. There will be papers by several invited guests, a symposium and a number of voluntary papers. Dr. E. G. Gill, of Roanoke, is secretary-treasurer.

Dr. T. E. Armstrong,

Recently physician to the Tubize Company in Hopewell, Va., has gone to New York, where he is taking post-graduate work in diseases of the eye, ear, nose and throat with a view to entering private practice.

Dr. and Mrs. William Branch Porter,

Recently of Roanoke, Va., sailed early this month for Europe. Mrs. Porter will travel on the continent, while Dr. Porter is engaged in scientific work. They will return next summer and make their home in Richmond, where Dr. Porter will be connected with the Medical College of Virginia.

Superintendent of Southwestern State Hospital.

Dr. George A. Wright, of Abingdon, Va., has been elected superintendent of the Southwestern State Hospital at Marion, Va., to fill the unexpired term of Dr. E. H. Henderson, who died the latter part of February. Dr. Wright was formerly first assistant physician at this hospital, but for the past few years has been connected with the staff of the George Ben Johnston Memorial Hospital at Abingdon, Va.

Dr. Horace G. Longaker,

Newport News, Va., recently resigned as assistant city health officer of that place.

The Richmond Ophthalmological and Otolaryngological Society,

At its annual meeting on February the 15th, elected the following officers for the ensuing year: President, Dr. R. H. Wright; vice-president, Dr. T. E. Hughes; secretary-treasurer, Dr. Francis H. Lee (re-elected).

Dr. E. A. Holmes,

Formerly of Broadford, Va., is now located in Marion, Va., where he has been engaged in general practice for the past year.

Dr. John M. Love,

Of the U. S. Public Health Service, who has recently been stationed at New Haven, Conn., has been transferred to U. S. Veterans' Bureau Hospital, at Outwood, Ky.

Wanted.

An experienced woman assistant in laboratory, urological, X-ray, electric therapeutics, and secretarial work, desires position in a doctor's office. Richmond location preferred. References furnished. Address No. 40, care this journal. (Adv.)

Obituary

Dr. Frederick M. Hisey,

Of Edinburg, Va., died December 22, 1926, after an illness of more than a year, aged seventy-one years. Dr. Hisey graduated in medicine from the College of Physicians and Surgeons of Baltimore in 1881, and for forty-five years practiced his profession in Edinburg where he had many friends and was greatly beloved. His wife, who was Miss Mollie Wightman, died about two years ago. Dr. Hisey had been a member of the Medical Society of Virginia since 1889 and was a Mason and an Odd Fellow, both of which orders held their burial rites at the grave. He is survived by three brothers and a large family connection.

Dr. E. H. Henderson,

Superintendent of the Southwestern State Hospital at Marion, Va., died at his home in that place, February 25th, death being due to heart trouble. Dr. Henderson was born in Giles County, Va., fifty-five years ago and studied medicine at the former University College of Medicine, Richmond, from which he graduated in 1898. He became a member of the Medical Society of Virginia the following year. Dr. Henderson had been connected

with the hospital at Marion for the past seventeen years and had been its superintendent since 1914. His wife, three brothers and a sister survive him.

Dr. Thomas Clinton Firebaugh,

Prominent physician of Harrisonburg, Va., died at the hospital in that place on January the 12th, after a short illness with pneumonia. Dr. Firebaugh was born at Mt. Clinton, Va., fifty-eight years ago and studied medicine at the University of Virginia, receiving his diploma in 1894. He had been a member of the Medical Society of Virginia since 1899. Dr. Firebaugh was prominently identified with the professional and civic life of Harrisonburg and had a large circle of friends. He had been specializing for some years in X-ray work and had practiced continuously in Harrisonburg except for the time he saw service in the World War. He was never married but is survived by two brothers, a sister and an adopted brother.

Resolutions on Death of Dr. William P. McGuire.

The Medical Staff of the Winchester Memorial Hospital, Winchester, Va., at its meeting on February 4, 1927, adopted the following resolutions on the death of Dr. McGuire:

On the evening of November 15, 1926, the life of Dr. William P. McGuire came to a close. The opportunities for usefulness in such a long life have been given to but few, and that these opportunities were taken full advantage of is well known even by those who had only a remote acquaintance with him.

Dr. McGuire was born in Winchester on July 19, 1846. When a lad of sixteen, he enlisted as a private in the Confederate Army, and served until captured, remaining a prisoner until the end of the war.

Following in the footsteps of his illustrious father, Dr. Hugh Holmes McGuire, he entered the profession of medicine and graduated from the Medical College of Virginia in 1867. Returning to Winchester, he entered actively into professional life here and continued practice over a period of sixty years. Probably no one person played a more important part in the organization, construction and operation of the Winchester Memorial Hospital than Dr. McGuire. Not only through his personal work, but it was largely through his influence, that funds were obtained from people of wealth of New York and elsewhere for the establishment of this institution. His efforts were always in the direction of a larger and better hospital and he was ever jealous lest its standards would not be of the highest. Even in the latter years of his life, although no longer actively engaged in hospital work, his interest never failed.

Dr. McGuire was more than a good physician; he was also a most excellent business man, having been the president for years of one of our most successful banks, and having in the past administered severally very large estates. That he was of importance to his community is attested by the fact that he was a member of the Handley Board of Trustees, President of Mt. Hebron Cemetery Company, a member of the Board of Trustees of the Shenandoah Valley Academy, and a member of a commission to care for George Washington's Headquarters.

In addition to all of these, he had time for his Church, having been a very active and interested member of Christ Episcopal Church, on the vestry of which he served for more than forty years.

Because of these facts, and because of the fine life of devotion to his community and to his family, the Staff of the Winchester Memorial Hospital, deeply sensible of the great loss sustained by the death of Dr. McGuire, and fully realizing that the written word is entirely inadequate to express our sorrow for his death, or our appreciation of his useful life, yet desiring to place upon our record a tribute to his memory, do therefore resolve,

THAT in the death of Dr. William P. McGuire, we have lost a most valuable member, whose professional life was an inspiration to those of us who were so fortunate as to have been associated with him, and whose worth to this staff and the hospital will be appreciated more and more with the passing of years.

THAT we extend to his family our heartfelt sympathy and pray that they will be comforted by the knowledge of his Christian life, and the promise of our Saviour to his faithful servants when He said, "We shall meet again where there shall be no more parting and no more sorrow."

THAT a copy of these resolutions be spread upon the minutes of this organization, that a copy be sent to members of the family, and that a copy be published in the *Winchester Evening Star* and in the VIRGINIA MEDICAL MONTHLY.

J. E. HARRIS, *Secretary,*
Winchester Memorial Hospital.

Dr. Sumpter George,

Of Pelham, N. C., died in Danville, Va., February 21st, of heart disease. He was sixty-four years of age and was graduated in medicine from the University of the City of New York in 1886. He practiced for a number of years in Danville, before moving to Pelham, and was formerly a member of the Medical Society of Virginia.

Dr. Moulton K. Johnson,

Medical Inspector Commander, U. S. Navy, retired, died at his home in Cincinnati, Ohio, in January, as the result of a fall on an icy sidewalk. He was fifty-seven years of age and graduated in medicine from the University of Virginia, in 1895.

Malcolm Hart Harris.

Friends of Dr. and Mrs. George T. Harris, of Madison Heights, Va., will learn with regret of the death of their young son, Malcolm, nine years of age, early in February. Death was due to a hemorrhage of the brain caused by a blow from a baseball while playing.

VIRGINIA MEDICAL MONTHLY

INDEX TO VOLUME LIII

APRIL, 1926—MARCH, 1927, INCLUSIVE

INDEX OF CONTRIBUTORS

DR. WALTER P. ADAMS, Norfolk, Va. 310
DR. C. J. ANDREWS, Norfolk, Va. 448
DR. VINCENT W. ARCHER, University, Va. 649
DR. W. P. ARGY, Washington, D. C. 504
DR. O. O. ASHWORTH, Richmond, Va. 359
DR. HARRY W. BACHMAN, Bristol, Va. 576
DR. B. M. BAKER, Norfolk, Va. 253
DR. H. HARTWELL BASS, Durham, N. C. 425
DR. I. A. BIGGER, University, Va. 4
DR. SAMUEL ORR BLACK, Spartanburg, S. C. 184
DR. L. MINOR BLACKFORD, Rochester, Minn. 249
DR. WYNDHAM B. BLANTON, Richmond, Va. 51, 390, 787
DR. JOSEPH COLT BLOODGOOD, Baltimore, Md. 805
DR. C. E. BOWLES, Pulaski, Va. 599
DR. WILBUR M. BOWMAN, Petersburg, Va. 231, 459, 651
DR. P. W. BOYD, Winchester, Va. 387
DR. WALTER M. BRICKNER, New York, N. Y. 260
DR. ARTHUR SUMNER BRINKLEY, Richmond, Va. 27, 591
DR. ALEXANDER G. BROWN, Jr., Richmond, Va. 22
DR. GRAFTON TYLER BROWN, Washington, D. C. 229
DR. M. O. BURKE, Richmond, Va. 492
DR. L. A. CALKINS, University, Va. 78
DR. W. A. CAMPBELL Old Church, Va. 183
DR. ESTILL L. CAUDILL, Narrows, Va. 796
DR. C. N. CHIPMAN, Washington, D. C. 245
DR. WRIGHT CLARKSON, Petersburg, Va. 657, 793
DR. LOUIS H. CLERF, Philadelphia, Pa. 279
DR. DEAN B. COLE, Richmond, Va. 71
DR. CLAUDE C. COLEMAN, Richmond, Va. 761
DR. PAUL C. COLONNA, New York, N. Y. 794
DR. NAT H. COPENHAVER, Bristol, Va.-Tenn. 351
DR. T. DEWEY DAVIS, Richmond, Va. 446
DR. A. I. DODSON, Richmond, Va. 305
DR. GILBERT FRANKLIN DOUGLAS, Birmingham, Ala. 519
DR. T. LATANE DRISCOLL, Richmond, Va. 8, 248, 470, 704
DR. G. B. DUDLEY, Martinsville, Va. 110
DR. L. S. EARLY, Petersburg, Va. 655
DR. R. CANNON ELEY, Charlottesville, Va. 159
DR. BEVERLEY F. ECKLES, Richmond, Va. 38, 250
DR. JAMES M. FADELEY, Washington, D. C. 737
DR. A. T. FINCH, Chase City, Va. 111
DR. J. O. FITZGERALD, Jr., Richmond, Va. 129, 189
DR. ROY K. FLANNAGAN, Richmond, Va. 801
DR. J. C. FLIPPIN, University, Va. 565
DR. JOSEPH F. GEISINGER, Richmond, Va. 288, 451, 772
DR. G. B. GILMORE, New York, N. Y. 55
DR. E. G. GILL, Roanoke, Va. 437, 591, 792
DR. ARMISTEAD W. GILLS, Richmond, Va. 119, 611
DR. ALFRED GORDON, Philadelphia, Pa. 16
DR. JAMES R. GORMAN, Lynchburg, Va. 378
DR. JAMES N. GREEAR, Washington, D. C. 235
DR. ST. GEORGE T. GRINNAN, Richmond, Va. 500
DR. A. B. GRUBB, Cripple Creek, Va. 172
DR. CUSTIS LEE HALL, Washington, D. C. 729
DR. GEO. P. HAMNER, Lynchburg, Va. 40
DE WITT HAMRICH, B. A., University, Va. 48
DR. EDWARD M. HANRAHAN, Baltimore, Md. 173
DR. B. E. HARRELL, Norfolk, Va. 241
DR. R. H. HARRINGTON, Grant, Va. 579
DR. W. L. HARRIS, Norfolk, Va. 485
DR. V. K. HART, Statesville, N. C. 514
DR. H. T. HAWKINS, Clover, Va. 238
DR. CHAS. C. HASKELL, Richmond, Va. 765
DR. HARRY M. HAYTER, Roanoke, Va. 214
DR. AIME PAUL HEINECK, Chicago, Ill. 315, 603
DR. FRANK HELVESTINE, Jr., Danville, Va. 35
DR. WM. H. HIGGINS, Richmond, Va. 355, 670
DR. SEAVY HIGHSMITH, Fayetteville, N. C. 107
DR. A. B. HODGES, Norfolk, Va. 582
DR. FRED M. HODGES, Richmond, Va. 281, 727
DR. J. ALLISON HODGES, Richmond, Va. 7, 557
DR. J. SHELTON HORSLEY, Richmond, Va. 80, 419, 523, 618, 647, 713
DR. J. SHELTON HORSLEY, Jr., Richmond, Va. 148, 782
DR. JAMES W. HUNTER, Norfolk, Va. 665
DR. J. MORRISON HUTCHESON, Richmond, Va. 295
DR. W. W. INSLEY, Christiansburg, Va. 367
DR. AARON JEFFERY, Newport News, Va. 745
DR. FRANK S. JOHNS, Richmond, Va. 71, 580
DR. THOMAS D. JONES, Richmond, Va. 379
H. E. JORDAN, Ph.D., University, Va. 776
DR. HOWARD F. KANE, Washington, D. C. 43
DR. BITTLE C. KEISTER, Washington, D. C. 31
DR. E. L. KENDIG, Victoria, Va. 28
DR. LINWOOD D. KEYSER, Roanoke, Va. 493
DR. BERNARD H. KYLE, Lynchburg, Va. 735
DR. ROBERT SCOTT LAMB, Washington, D. C. 370
DR. E. L. LAWRENCE, Roanoke, Va. 349
DR. R. M. LE COMTE, Washington, D. C. 168, 596, 676
DR. SOUTHGATE LEIGH, Norfolk, Va. 719
DR. JANVIER W. LINDSAY, Washington, D. C. 709
DR. EUGENE L. LOWENBURG, Norfolk, Va. 455
DR. CHARLES H. LUPTON, Norfolk, Va. 395
DR. WILLIAM J. MALLORY, Washington, D. C. 41
DR. W. F. MANLEY, Roanoke, Va. 597
DR. WILLIAM B. MARBURY, Washington, D. C. 95
W. BROADDUS MASSEY, D.D.S., Richmond, Va. 368
DR. G. M. MAXWELL, Roanoke, Va. 396
DR. LOUIS A. McALPINE, Portsmouth, Va. 435
DR. HUNTER H. McGUIRE, Winchester, Va. 511
DR. STUART McGUIRE, Richmond, Va. 465, 546
DR. WILLIAM B. McILWAINE, Petersburg, Va. 285
DR. NELSON MERCER, Richmond, Va. 157
DR. CLIFTON M. MILLER, Richmond, Va. 88
DR. J. M. MILLER, Wytheville, Va. 443
DR. R. A. MORISON, Abingdon, Va. 572
DR. H. B. MULHOLLAND, University, Va. 565
DR. A. E. MURRAY, Beaver Dam, Va. 181
DR. ALONZO MYERS, Charlotte, N. C. 115
DR. PHIL H. NEAL, Catawba Sanatorium, Va. 496
DR. JOHN H. NEFF, University, Va. 701
DR. GARNETT NELSON, Richmond, Va. 91, 769
DR. SAMUEL NEWMAN, Danville, Va. 662
DR. WILLIAM PATTERSON, Richmond, Va. 239
DR. M. J. PAYNE, Staunton, Va. 525
DR. O. H. PERRY PEPPER, Philadelphia, Pa. 207
DR. WILBUR M. PHELPS, Staunton, Va. 507
DR. CHARLES PHILLIPS, Richmond, Va. 562
DR. H. W. PHILLIPS, Norfolk, Va. 471
DR. W. A. PLECKER, Richmond, Va. 402
DR. WM. B. PORTER, Roanoke, Va. 141
DR. WILLIAM C. POWELL, Petersburg, Va. 660
DR. JOHN W. PRESTON, Roanoke, Va. 292
DR. B. M. RANDOLPH, Washington, D. C. 10
DR. J. E. RAWLS, Suffolk, Va. 325, 675
DR. JULIAN L. RAWLS, Norfolk, Va. 145, 567
DR. I. K. REDD, Atlee, Va. 243
DR. FRANK H. REDWOOD, Norfolk, Va. 103
DR. JAMES W. REED, Norfolk, Va. 323, 732
DR. G. H. REESE, Petersburg, Va. 589
DR. R. F. RHUDY, Abingdon, Va. 499
DR. W. H. RIBBLE, Wytheville, Va. 313
DR. E. CLARENCE RICE, Washington, D. C. 709
DR. CHARLES R. ROBINS, Richmond, Va. 347
DR. M. PIERCE RUCKER, Richmond, Va. 97, 362, 580
WORTLEY F. RUDD, Ph.G., Richmond, Va. 490
DR. MILLARD B. SAVAGE, Norfolk, Va. 74
DR. P. E. SCHOOLS, Richmond, Va. 71
DR. MAURICE A. SELINGER, Washington, D. C. 709
DR. BLANTON P. SEWARD, Richmond, Va. 162
DR. FRANK B. STAFFORD, Charlottesville, Va. 159
DR. A. L. STAVELY, Washington, D. C. 176
DR. H. U. STEPHENSON, Richmond, Va. 559

DR. W. CALHOUN STIRLING, Washington, D. C. 430, 678
DR. JAMES B. STONE, Richmond, Va. 440
AUBREY H. STRAUS, M. A., Richmond, Va. 359, 740
DR. DANIEL D. V. STUART, Jr., Washington, D. C. 154
DR. ROBERT YOUNG SULLIVAN, Washington, D. C. 516
DR. E. H. TERRELL, Richmond, Va. 13
SURGEON E. M. TOWNSEND, Norfolk, Va. 221
DR. G. B. TRIBLE, Washington, D. C. 682
DR. HUGH H. TROUT, Roanoke, Va. 214
DR. BEVERLEY R. TUCKER, Richmond, Va. 85
DR. R. W. UPCHURCH, Richmond, Va. 359
DR. DOUGLAS VANDERHOOF, Richmond, Va. 446
DR. E. U. WALLERSTEIN, Richmond, Va. 298
DR. J. B. H. WARING, Blanchester, Ohio 462, 806
DR. R. G. WATERHOUSE, Kinston, N. C. 798
DR. WALTER A. WELLS, Washington, D. C. 629
DR. CHARLES WILLCOX, Washington, D. C. 382
DR. CARRINGTON WILLIAMS, Richmond, Va. 722
DR. ENNION G. WILLIAMS, Richmond, Va. 403, 642, 745
DR. V. BLACKSTONE WILLIAMS, Washington, D. C. 186
DR. A. MURAT WILLIS, Richmond, Va. 1
DR. J. D. WILLIS, Roanoke, Va. 350
DR. FLETCHER D. WOODWARD, Charlottesville, Va. 299
DR. J. EDWIN WOOD, Jr., University, Va. 48
DR. J. A. WRIGHT, Doswell, Va. 105
DR. CHARLES A. YOUNG, Roanoke, Va. 25, 233, 357

INDEX OF SUBJECTS

Italics Indicate Subjects of Original Communications

Abdomen, The diagnostics of the acute, 250; The value of studying the renal tracts as an aid to correct diagnosis of acute and chronic diseases of the — 499
Abdominal complications during pregnancy, The management of acute 591
Achlorhydria; a clinical study of 100 cases 48
Adynamic ileus in urology 596
Air injections, A case of tuberculous peritonitis treated with 157
Alcohol in medicine, The use of 382
Alexander, Last illness of 692
Alkalosis 693
Ammonium chloride and novasurol in case of nephritic edema, Diuretic action of 752
Anemia, Pernicious, 269; Diet in treatment of — —, 796
Anesthesia, Local, 95; — — in partial gastrectomy for cancer of the stomach, 80; 523; Occasional causes of failure in regional — for hernia operations 173
Anesthetic, Ethylene the new general 245
Antiluetic drugs, The indication and limitations of 8
Antimony in Vincent's infections, Further study of 248
Appendicitis, Peritonitis as related to, 675; *Etiology of —; all forms*, 349; *Pre- and post-operative medical treatment of —*, 350; *Surgical treatment of —* 351
Arthritis, Chronic 475
Ascites of hepatic disease treated by novasurol 752
Aseptic intestinal resection: report of case 722
Ataxic stage of tabes, A valuable diagnostic sign in the early 7
Atrophy, Fracture of the skull and unilateral optic 514
Auxiliary, Why a woman's? 687; The woman's — from the national standpoint 747
Bacillary dysentery: report of case with laboratory discussion 359
Bedside study of the circulation in acute and chronic infections 91
Bile tract, Experience with non-surgical drainage of, by the Lyon method 22
Biliary tract surgery, Factors in lowering mortality in 435
Bladder, Hunner's ulcer of the; a report of ten cases 305
Blood and lymph, 128; — *letting*, 129; Damaged hearts and high — pressure, 60; The clinical importance of secondary features of the — count in disease, 207; — infection in diabetes, 617; The — in scarlet fever 709
Boards (see *Societies, etc.*)
Bonaparte, Napoleon, Postmortem examination of the body of General 692
Bone infections 115, 260

BOOK ANNOUNCEMENTS

Abt—Pediatrics, Vol. VIII and general Index 267
Annual Reprint of Reports of Council on Pharmacy & Chemistry of A. M. A. for 1925 335
Balyeat—Hay Fever and Asthma 335
Bartlett-Mayo—The Surgical Treatment of Goiter — 474
Becuwkes—Amer. Relief Administration Bulletin 267
Bethea—Practical Materia Medica and Prescription Writing with Illustrations. 408
Blanton—A Manual of Normal Physical Signs 193
Blum—Practical Dietetics for Adults and Children in Health and Disease 474
Cabot—Facts on the Heart 192
Collected Papers by the Staff of the *Henry Ford Hospital* 193
Collected Papers of the *Mayo Clinic and the Mayo Foundation* 267
Crile-Rowland—A Bipolar Theory of Living Processes 193
Crummer—Clinical Features of Heart Disease 192
Dock-Quinby—Text-Book of Materia Medica for Nurses 193
Dorland-Hubeny—The X-Ray in Embryology and Obstetrics 408
Edgar-Vaux—Edgar's Practice of Obstetrics 267
Ellis—Elements of Pathology 335
Foote—Diseases of the New-Born 193
Fortieth Annual Report of Bureau of Amer. Ethnology 192
Gould—Gould's Medical Dictionary 407
Greene—Medical Diagnosis for Student and Practitioner 192
Hirschman—Handbook of Diseases of the Rectum 193
International Clinics, Vol. I, 1926 Series, 59; Vol. III, 1926 Series 474
International Medical Annual 193
Karsner-Flexner—Human Pathology 615
Kerley—Short Talks with Young Mothers on the Management of Infants and Young Children 474
Lorand—Defective Memory, Absentmindedness and Their Treatment 474
Mayo-Plummer—The Thyroid Gland 193
Medical Record Visiting List or Physician's Diary for 1927 615
Miller—Cannula Implants and Review of Implantation Technics in Esthetic Surgery 408
Montague-Brooks—The Modern Treatment of Hemorrhoids 408
Morgan—Electrothermic Methods in the Treatment of Neoplastic Diseases 408
Morse—Clinical Pediatrics 335
New England Mutual Life Insurance Co.—Life Insurance Medicine 615
New and Non-Official Remedies, 1926 335
Nutting—A Sound Economic Basis for Schools of Nursing and Other Addresses 615
Orr—Modern Methods of Amputation 193
Ostromislensky—The Scientific Basis of Chemotherapy 615
Potter-Scott—Therapeutics, Materia Medica and Pharmacy 193
Public Health Bulletins 474
Richardson—Parenthood and the Newer Psychology 193
Sampson—A Practice of Physiotherapy 474
Sauer—Nursery Guide for Mothers and Children's Nurses 193
Scott—Gould and Pyle's Pocket Cyclopedia of Medicine and Surgery 192
Scudder—The Treatment of Fractures 408
Stevens—The Practice of Medicine 750
Stopes—The Human Body 615
Sutton—Diseases of the Skin 193
Trans. of the College of P. & S. of Phila. 408
United Fruit Company Annual Report 267
Wilcox—Materia Medica and Therapeutics, Including Pharmacy and Pharmacology 193
Young-Davis—Young's Practice of Urology 192

Borderlands of pathology, Notes upon certain 292
Bowel, Cancer of the small 185
Breast tumors, Treatment of, 145; Benign tumors of the male —, 35; *Tumors of the —, with special reference to their diagnosis and treatment* 713
Brickner's article on "Attenuated Bone Infections," Dr. 260
Bronchus, Value of endoscopy in locating foreign bodies in the, 299; Grain of corn in right main —; removal by use of bronchoscope 792
Bronchoscope, Removal of grain of corn in right main bronchus by use of the 792
Caesarean section: types and technique 43
Calculi, The cause and treatment of urinary, 162; Ureteral —: review of 41 cases with lantern slides 430
Cancer and colloidal lead, 477; Partial gastrectomy under local anesthesia for — of stomach in man 71 years of age, 80; — of the gastro-intestinal tract below the diaphragm, 184; Koch's — antitoxin, 199, 618; Case of — of stomach in man 73 years of age, with partial gastrectomy under local anesthesia, 523; Lake Mohonk symposium on — control, 540; The Roentgen ray treatment of skin — and allied conditions 727
Carcinoma of the pancreas 355
Cardiac pain, Observations on 295
Cardio-vascular pathology in diabetes 617
Carter, Dr. Henry R., U. S. P. H. S., 398; *Memorial meeting of the Norfolk County Medical Society to honor the memory of — — — —* 253
Cataract, The treatment of incipient, 511; *The intracapsular method of — extraction: report of cases* 239
Chest, The correlation of X-ray findings and clinical findings, especially in diseases of the 507
Child, Orthopedic surgery as applied to the cripple 735
Childhood and infancy, Urologic conditions in 451

Children and infants, Lobar pneumonia in: statistical study of 137 cases treated in hospital wards 440
Chiropractors, illegal 196, 270
Cholecystic disease, Diagnosis of 576
Cholecystography 281
Choroid, Miliary tuberculosis of the 235
Cicatricial contraction, The causes of 325
Circulation in acute and chronic infections, The bedside study of the 91
Circulatory disturbances on post-operative mortality, The influence of 670
Cirrhosis of the liver 410
Cleft palate and harelip 782
Clinic, The modern medical 465
Clinical importance of secondary features of the blood count in disease, The, 207; Virginia physicians tell of — tour of Europe, 323; The correlation of X-ray findings and — findings, especially in diseases of the chest 507
Cold, A study of the "common" 787
Collapse of the lung, Massive: report of four cases 214

Colleges
Medical College of Virginia 197
University of Virginia, Dept. of Medicine 270

Colloidal lead and cancer 477
Come over into our village and help us 172
Congenital torticollis 794
Constitution and By-Laws for the Medical Society of Virginia, Proposed 327
Consultation, A consideration of the progress and value of 588
Country surgeon, A.: John Peter Mettauer, A. M., M. D., LL. D. 485
Cripple child, Orthopedic surgery as applied to the 735
Cults, The: Shall they pass? 557
Curettage, Uterine: its limitations 28
Currents in treatment of neoplastic disease, high frequency 425
Cyst of the thyroglossal duct, Report of a case of 591
Cystitis, a symptom 288
Death, Sudden, 390; Last illness and — of Washington 629, 745
Deaths (see *Obituary Record*).
Defence, Health in relation to National 119
Diabetes mellitus, dietetic and insulin treatment of, 459; — — *and interlocking maladies*, 616; —, 111; *Diseases of the liver and pancreas in* —, 616; *Cardiovascular pathology in* —, 617; *Syphilis, tuberculosis, pneumonia and blood infection in* —, 617; Juvenile — and Joslin 751
Diagnostic sign in the early ataxic stage of tabes, A valuable 7
Diagnostics of the acute abdomen, The 250
Diarrhea, The treatment of summer 285
Diarrhoeas of infancy, The etiology and treatment of 732
Diet in treatment of pernicious anemia 796
Dietetic and insulin treatment of diabetes mellitus 459
Digitalis, The toxic action of, on the heart muscle 141
Diphtheria, Some thoughts on 105
Disease, Exercise and posture in relation to 729
Diseases of middle life: Can we prevent them? 492; Modern progress in our knowledge of the etiology of — 455
Diuretic in cases of edema, Novasurol as a 504
Diuretics in congestive heart failure, The value of the xanthine 752
Doctors in rural communities, Need of 172
Drainage of the bile tract by the Lyon method, Experience with non-surgical 22
Drugs, The indications and limitations of antiluetic, 8; The elimination of substandard — the object of the new survey by Bureau of Chemistry 685
Duodenal ulcer, A practical treatment of 741
Duodeno-pyloric ulcers, Clinical diagnosis of 367
Duodenum and stomach, The present status of treatment of ulcer of 1
Dysentery, Bacillary: report of a case, with laboratory discussion 359
Dysthyroidism, Iodine in: a review 310
Dystrophy of the endocrine glands in relation to the eyes 370
Ear trouble, Non-operative treatment of chronic middle 378
Eclampsia, The treatment of 97
Edema, Novasurol as a diuretic in case of, 504; *Diuretic action of ammonium chloride and novasurol in case of nephritic* — 752
Electrocardiograph, The 812
Electrocardiographic nomenclature 813
Electrothermic methods in neoplastic diseases 425
Empyema, The treatment of chronic 27
Encephalitis, Report of two cases of epidemic 238
Endameba histolytica in carriers, The symptomatology of infection with 742
Endocrine glands in relation to the eyes, Dystrophy of the 370
Endometrial cell invasions 176
Endoscopy at University of Virginia Hospital, Report of year's work in 299
Esophagus, The diagnosis of diseases of the, 279; *Value of endoscopy in locating foreign bodies in the* — 299
Ether, The treatment of whooping cough with intramuscular injections of 662
Ethmoid-sphenoid disease, Paralysis of 3rd, 4th and 6th nerves from 88
Ethylene: the new general anesthetic 245
Etiology of diseases, Modern progress in our knowledge of the 455
Europe, Virginia physicians tell of clinical tour of 323
Eustachius 808
Exercises and posture in relation to disease 729
Exophoria: analyses and treatment of 167 cases 25
Eye conditions seen by the general practitioner, Common 357
Eyes, Dystrophy of the endocrine glands in relation to the, 370; Nitrate of silver solution in infants' — 402
Fall hay fever in the District of Columbia and vicinity 229
Feeding the normal infant the first year 372
Fever in children and young adults, acute rheumatic 194
Focal infection and rheumatism, 194, 195; Iritis and — — 545
Forceps, The Kielland 580
Foreign body removed from right main bronchus by use of bronchoscope 792
Fracture of the skull and unilateral optic atrophy 514
Functional Disorders 85
Gall stone formation 410
Gall-bladder, The surgical indications of inflammatory diseases of the, 315; *Chronic — disease: its medical aspects*, 41; X-ray of the —, 281; Factors in lowering mortality in — surgery, 435; *Etiology and pathology of diseases of the* —, 572; Diagnosis of diseases of the —, 576; *Complications incident to the treatment of inflammatory diseases of the* —, 603; *Radiological studies of the* — 798
Gastrectomy, Partial, under local anesthesia for cancer of stomach in man 71 years of age, 80; — — — — — — — — — —, 73; — — — 523
Gastric function, Derangements of 423
Gastro-duodenal ulcer treated by medical means: results in 100 cases 754
Gastro-intestinal tract below the diaphragm, Cancer of the 184
Gentian violet and mercurochrome-220 soluble in treatment of sepsis, The intravenous administration of: Report of 69 injections 148
Genitalia, Correlation of lesions of the 704
Globus hystericus 279
Goiter, Iodine in, 336; The surgical management of handicapped toxic — patients: with illustrative cases 493

Gynecology for the general practioner, 719; Theories underlying the treatment of malignancy as applied to —, 347; The hypoplastic tendency in — 516; *The surgical aspect in* — 519
Harelip and cleft palate 782
Hay fever in the District of Columbia and vicinity, Fall 229
Health in relation to National defense, 119; Plan for promotion of periodic — examinations, 542; The debatable fields of public — activity, 642; — of the people, 742; Ten — commandments, 816; *Contacts in public — work* 801
Heart muscle, The toxic action of digitalis on the, 141; Observations on — pain, 295; Functional — tests, 545; On the percussion of the —, 665; The value of the xanthine diuretics in congestive — failure, 752; — *sounds and their interpretation* 769
Hearts, Damaged, and high blood pressure, 60; — — *of hypertension* 61
Hematuria, Some clinical considerations of: with lantern slides 678
Hemorrhoidal technic, Improved 462
Hemorrhoids, Treatment of, by injection 13
Hepatic disease treated by novarsurol, ascites of 752
Hernia operations, Occasional causes of failure in regional anesthesia for 173
Hernias 221
High frequency currents in treatment of neoplastic disease 425
Hilus pneumonia 525
Historical notes on syphilis 471
History in the diagnosis of pulmonary tuberculosis, The value of the, 496; Medical — 691
Horsley, Dr. J. Shelton, our new president, 546; The John — memorial prize in surgery 694
Hospital, Why standardize the 387
Hunner's ulcer, 737; — — *of the bladder: a report of ten cases* 305
Hypertension, Damaged hearts of, 61; Chronic — nephritis in a child showing unusual neurological symptoms 103
Hypoplastic tendency in gynecology, The 516
Hystericus, Globus 279
Ileus, Adynamic, in urology 596
Illness and death of Washington, Last, 629, 691, 745; Last — of Alexander 692
Indigestion based on an analysis of 4,000 consecutive cases, A study of the causes of 446
Infancy and childhood, Urologic conditions in, 451; Etiology and treatment of diarrhoeas of — 732
Infant, Feeding the normal, the first year 372
Infants and children, Lobar pneumonia in: statistical study of 137 cases treated in hospital wards, 440; Acute mastoiditis in —: report of three cases, 110; Nitrate of silver solution in — eyes 402
Infection with endameba histolytica in carriers, The symptomatogy of 742
Infections, bone, 115, 260; The bedside study of the circulation in acute and chronic —, 91; Rheumatism and focal —, 194; The Roentgen ray treatment of subacute — 649
Inflammatory diseases of the gallbladder, The surgical indications of 315
Injection treatment of hemorrhoids 13
Injuries without external signs, internal: case reports 38
Insulin and diabetic treatment of diabetes mellitus 459
Internal injuries without external signs: case reports 38
Intestinal resection, Aseptic: report of cases, 722; Cancer of the gastro- — tract below the diaphragm, 184; The treatment of — obstruction and general peritonitis, 567; Mistaken diagnosis of — parasites 579
Intestine, Simple ulcer of the small 4
Intracapsular method of cataract extraction, The: report of cases 239
Intramuscular injections of ether, The treatment of whooping cough with 662
Intrapartum infections, Report of cases of 74
Intravenous mercurochrome-220: report of a case 231
Iodine in dysthyroidism: a review, 310; — *medication and the thyroid gland* 336
Irradiation of diseased tonsils 741
Iritis and focal infection 545
Itching as a symptom 753
Jaundice 409
Joslin and juvenile diabetes 751
Juvenile diabetes and Joslin 751
Kidney tumors: report of cases, 701; *Present method of dealing with — and ureteral stone*, 107; *The normal* — 651
Kielland forceps, The 580
Koch cancer cure, The, 618; — cancer antitoxin 199
Laboratory technic situation in the State, The present 562
Laryngeal nerve in association with mitral stenosis, Paralysis of the left recurrent 298
Larynx, Value of endoscopy in locating foreign bodies in 299
Lead, Colloidal, and cancer 477
Legal aspects of morbid impulses, Medico- 16
Lesions of the genitalia, Correlation of 704
Letter to the profession, Open 745
Literature of 1925, A review of the chief medical 51
Liver substance in treatment, 268; *The* —, 409; Diseases of the — and pancreas in diabetes 616
Lobar pneumonia in infants and children: a statistical study of 137 cases treated in hospital wards, 440; The management of — —, 181; Treatment of acute — —, 183; The prevention of acute — pneumococcus pneumonia 243
Local anesthesia, 95; — — for partial gastrectomy for cancer of stomach 80, 523
Luetic drugs, The indications and limitations of anti- 8
Lung collapse in the treatment of pulmonary tuberculosis, 71; Massive — — for post-operative pulmonary complications 214
Lymph and blood 128
Lymphocyte, The reticulo-endothelial system with special reference to the 776
Lyon method, Experience with non-surgical drainage of the bile tract by the 22
Male breast, Benign tumors of the 35
Malignancy as applied to gynecology, Theories underlying the treatment of 347
Malignant diseases, High frequency currents in 425
Mask sterilization neglected 471
Mastoiditis in infants, Acute: report of three cases, 110; *Thrombosis of the lateral and cavernous sinuses complicating acute —: report of two cases, one involving the cavernous sinus as well as the lateral sinus* 437
Medical Society of Virginia, Minutes of the fifty-seventh annual meeting, 526; Proposed Constitution and By-Laws for the — — — —, 327; — history, 691; A review of the — literature of 1925, 51; The modern — clinic, 465; The — profession of Virginia and State medicine, 647; — treatment in 100 cases of gastro-duodenal ulcer 754
Medicine, The use of alcohol in, 382; Practice of —: how it should be regulated by law, 559; The medical profession of Virginia and State — 647
Medico-legal aspects of morbid impulses 16
Memorial meeting of Norfolk County Medical Society to honor memory of Dr. Henry R. Carter, late assistant surgeon general, U. S. P. H. S. 253
Mental patient, The somatic side of the 186
Mercurial poisoning from local applications of mercurial ointment: report of cases 395
Mercuric chloride poisoning, A review of various methods proposed for the treatment of 765
Mercurochrome-220 soluble, Intravenous: report of a case, 231; The intravenous administration of — — — and gentian violet in the treatment of sepsis: report of 69 injections 148

Mettauer, John Peter, A. M., M. D., LL. D.: a country surgeon 485
Michigin State Medical Journal and "Washington" article 751
Middle life, Diseases of: can we prevent them? 492
Miliary tuberculosis of the choroid 235
"Milk sickness" and "trembles" 552
Mind, The care of the: a preventive of physical and nervous diseases 31
Mitral stenosis, Paralysis of the left recurrent laryngeal nerve in association with 298
Monocular occlusion, Determination of phorias by prolonged 233
Morbid impulses, medico-legal aspects of 16
Mortality in biliary tract surgery, Factors in lowering, 435; The influence of circulatory disturbances on post-operative — 670
Nasal accessory sinuses. The, 396; *Diagnosis of disease of the — — cavities* 599
National defense, Health in relation to the 119
Navy, Medical corps of the U. S. 119
Neck, wry-, The treatment of spasmodic 761
Neoplastic disease, The role of high frequency currents in the treatment of 425
Nephritic edema, Diuretic action of ammonium chloride and novarsurol in case of 753
Nephritis in a child showing unusual neurological symptoms, Chronic hypertension, 103; *The diagnosis of the various forms of —*, 655; *Treatment* of —, 660; *— in general* 676
Nerves, Paralysis of 3rd, 4th and 6th, from sphenoid-ethmoid disease 88
Nervous and physical diseases, The cure of the mind as a preventive of, 31; Psychic treatment of — disorders 154
Neurological symptoms. Chronic hypertension nephritis in child showing unusual 103
Nitrate of silver in infants' eyes. The danger of using other than the State solution of 402
Normal kidney, The 651
Novarsurol as a diuretic in cases of edema, 504; Diuretic action of — and ammonium chloride in case of nephritic edema, 752; Ascites of hepatic disease treated by — 752

Obituary Record

Dr. William Edward Anderson 206
Dr. Houghton Baxley 278
Dr. Humphrey Singleton Belt 556
Dr. Andrew Mason Brent 700
Dr. John Wilkins Brodnax 556, 628
Dr. Isaac Milton Brumback 628
Dr. Hampden Aulick Burke 760
Dr. Frank Lee Campbell 760
Dr. Russell Daniel Carman 278
Dr. Harry Gilmore Carter 138
Dr. Francis Miles Chisolm 556
Dr. Benjamin W. Cohn 206
Dr. John E. Coles 206
Dr. Emory Hale Connelly 70
Dr. Walter Cox 760
Dr. Bryan Gordon Crowell 278
Dr. Joseph H. Delaney 206
Dr. William W. Faison 556
Dr. Thomas Clinton Firebaugh 820
Dr. Sumpter George 820
Dr. James M. Gibson 556
Dr. John Bernard Halligan 418
Malcolm Hart Harris 820
Dr. E. H. Henderson 819
Dr. Frederick M. Hisey 819
Dr. David Jasper Hill 278
Dr. John Howland 278
Dr. John T. B. Hyslop 760
Dr. Moulton K. Johnson 820
Dr. Marshall Price Jones 206
Dr. William Joseph Jones 484
Dr. Alvin Davies Lamberth 760
Dr. Burnley Lankford 346, 418
Dr. Joseph H. Lawrence 206
Dr. John Wesley Long 346
Dr. Wirt Peebles Marks 418
Dr. George Burley Martin 140
Dr. Luther S. Mason 628
Dr. Thomas S. McDavitt 76
Dr. William P. McGuire 627, 820
Dr. Ludwig Mendelsohn 346
Dr. Powhatan Moncure 278
Dr. William Sterling Moody 418
Dr. William Wade Morris 206
William Mayo Oppenhimer 418
Dr. William Clayton Orr 417
Dr. William G. Painter 140
Dr. Eugene Pendleton 484
Dr. W. W. Rhudy 484
Dr. George Ross 70, 139
Dr. Lemuel Cornich Shepherd 139
Dr. Philip Turner Southall 628
Dr. Robert Scott Spilman 206
Dr. Morand Lee Stallard 484
Dr. Edward Dabney Starke 627
Dr. James Stretch 700
Dr. Isaac Webb Surratt 628
Dr. John Whitehead 206
Dr. John T. Wilkins 556
Dr. Readding Lloyd Williams 277
Dr. Robert Eugene Wine 418

Obstetrics, Practical points in 313
Operating room, Tissue diagnosis in the: and immediate cover-slip examination of all fluids and pus 805
Operative mortality, The influence of circulatory disturbances on post- 670
Optic atrophy, Fracture of the skull and unilateral 514
Orthodontist and otorhinologist. Some points of relationship between the 368
Orthopedic surgery as applied to the cripple child 735
Otitis media suppurative. Nonoperative treatment of chronic 378
Otorhinologist and orthodontist, Some points of relationship between the 368
Palate, Harelip and cleft 782
Pancreas, Carcinoma of the, 355; Disease of the — and liver in diabetes mellitus 616
Paralysis of the 3rd, 4th and 6th nerves from sphenoid-ethmoid disease, 88; — — — *left recurrent laryngeal nerve in association with mitral stenosis* 298
Parasites, Mistaken diagnosis of intestinal 579
Parathyroid hormone 477
Pathology, Notes upon certain borderlands of 292
Patient and physician, A plea for a closer relationship between 443
Pelvic organs, Invasion of, by epithelial cells of uterine mucosa 176
Peptic ulcer. Medical treatment of 40
Percussion of the heart, On the 665
Periodic health examinations, Plan for promotion of 542
Peritonitis as related to appendicitis, 675; A case of tuberculous — treated with air injections, 157; *The treatment of general — and allied conditions* 567
Pernicious anemia, 269; Diet in treatment of — — 796
Pharmacist, The physician and the 490
Phorias, Determination of, by prolonged monocular occlusion 233
Physical ailments of mental patients, 186; The care of the mind as a preventive of — and nervous diseases 31
Physician and patient, A plea for a closer relationship between the, 443; The — and the pharmacist 490
Physicians, An appeal to, 611; Need of — in rural committees 172
Pistons hung in record syringes, Removing 189
Placenta, retained, The frequency and symptoms of prolonged 362
Pneumococcus pneumonia, The prevention of acute lobar 243
Pneumonia in diabetes, 617; *Treatment of* — 10; *The management of lobar* —, 181; *Lobar — in infants and children: a statistical study of 137 cases treated in hospital wards*, 440; Treatment of acute lobar —, 183; The prevention of acute lobar pneumococcus —, 243; Hilus — 525
Pneumothorax, Spontaneous: with report of cases 565
Poisoning from local applications of mercurial ointment, Mercurial: report of cases, 395; A review of various methods proposed for treatment of mercuric chloride — 765
Postmortem examination of the body of General Napoleon Bonaparte 692
Posture and exercise in relation to disease 729
Practice of medicine: how should it be regulated by law? 559
Practitioner, general, Common eye conditions seen by the, 357; Gynecology for the — — 719
Pregnancy, excessive vomiting of, 78; *Management of acute abdominal complications during —* 591
President, Our new 546
President's appeal, The 693
Prize in surgery, The John Horsley 694
Progress in our knowledge of the etiology of diseases, Modern 455
Prostatectomy with reference to pre-operative treatment 241
Prostatism. Some considerations regarding 168
Psychogenic origin, Functional disorders of 85
Psychoneuroses, A rationalistic view of the 154
Psychopath, Medico-legal aspect of the 16

Public health activity, The debatable fields of, 642; *Contacts in — — work* 801
Puerperal sepsis: report of cases of intrapartum infections 74
Pulmonary tuberculosis, Lung collapse in treatment of, 71; Report on sputum examinations of 1,425 cases of — —, 159; Massive collapse of lung for post-operative — conditions, 214; The value of the history in the diagnosis of — — 496
Pulsus alternans 544
Purpura hemorrhagica or essential thrombocytopenia: report of a case with splenectomy, 582; — *of the urinary tract* 772
Pyloric ulcers, duodeno-, Clinical diagnosis of 367
Radiation, vitamins and rickets in the temperate zone 500
Radiological studies of the gall-bladder 798
Refraction, Analysis and treatment of 25
Regional anesthesia for hernia operations, Occasional causes of failure in 173
Relationship between physician and patient, A plea for a closer 443
Renal tracts as an aid to correct diagnosis of acute and chronic diseases of the abdomen, The value of studying the 499
Resection, Aseptic intestinal: report of cases 722
Respiratory infections, A study of acute upper 787
Reticulo-endothelial system with special reference to the lymphocyte, The 776
Rheumatic fever in children and young adults, Acute 194
Rheumatism and focal infection, 194, 195
Rickets in the temperature zone, vitamins, and radiation 500
Roentgen ray treatment of subacute infections, 649; *Points about — examination of the urinary tract that interest the referring physician*, 657; — — — of skin cancer and allied conditions 727
Roentgenograms of the gall-bladder 281
Ross, Dr. George 63
Salpingitis, Report of 100 consecutive cases of 589
Scar tissue contraction, The causes of 325
Scarlet fever, The blood in 709
Secondary features of the blood count in disease, The clinical importance of 207
Sepsis, The intravenous administration of gentian violet and mecurochrome-220 soluble in the treatment of: report of 69 injections 148
Shall they pass? 557
Sinus problem, The 682
Sinuses, The nasal accessory, 396; Diagnosis of disease of — — —, 599; Thrombosis of the lateral and cavernous — complicating acute mastoiditis: report of cases 437
Skin diseases, Differential diagnosis of the more common, 597; *The Roentgen ray treatment of — cancer and allied conditions* 727
Skull and unilateral optic atrophy, Fracture of the 514

Societies, Boards, etc.

Albemarle County Medical Society 746
Alexandria Medical Society 600
Amelia County Medical Society 539
American Society for Control of Cancer 540
American Laryngological Association 274
American Assn. of Genito-Urinary Surgions 204
American Gastro-Enterological Assn. 202
American Medical Association 131
American Ophthalmological Association 343
American Pediatric Society 277
American Public Health Association 551
American Roentgen Ray Society 200
American Surgical Association 201
American Therapeutic Society 345
American Urological Association 276
Arlington County Medical Society 417
Association of American Physicians 202
Association of American Medical Colleges 555
Assn. Surg. A. C. L. Ry. 754
Assn. Surg. N. & W. Ry. 548
Augusta Co. Med. Assn. 416, 425
Central District Medical Society 123
Charlotte County Medical Society 124, 472
Chi Zeta Chi Medical Fraternity 699
Clinch Valley Medical Society 478
Clinical Club of Washington 756
Conference of Va. Health Workers 69, 814
Cumberland County Medical Society 124
Dinwiddie County Medical Society 746
Dinwiddie Medical Auxiliary 688
Ex-Interns' Assn., St. Elizabeth's Hospital, Richmond 554
Graduate Nurses' Association of Va. 203
Halifax County Medical Society 625
Loudoun County Medical Society 539
Lunenburg County Medical Society 539
Lynchburg and Campbell County Medical Society 688
Md., D. C., Va., and W. Va. Sec., A. C. S. 758
Medical Association, Valley of Virginia 478
Medical & Chirurg. Faculty of Maryland 201
Medical Society D. C. 695
Medical Society State of N. C. 345
Medical Society of Va. 327, 411, 526, 548, 759
Medical Society Va., Legis. Com. 56
Medical Woman's Club of Va. 124
Nansemond County Medical Society 746, 814
National Assn. for Study of Epilepsy 276
National Committee for Mental Hygiene 626
National Tuberculosis Assn. 622
Norfolk County Medical Society 253, 259
Northern Neck Medical Society 540
Petersburg Medical Faculty 688
Pittsylvania—Danville Med. Soc. 746
Prince Edward Co. Health Board 480
Princess Anne Co. Med. Soc. 123
Richmond Acad. Medicine 688
Richmond Ophth. and Otolaryn. Society 819
Roanoke Acad. Med. 539
Rockbridge County Med. Soc. 58, 539, 817
Seaboard Med. Assn. of Va. and N. C. 697
S. C. State Med. Assn. 132
Southampton Co. Med. Soc. 472
South Piedmont Med. Soc. 124
Southside Va. Med. Assn. 697
S. W. Va. Med. Soc. 472
Southern Med. Assn. 620
Southern Surgical Assn. 695
Tazewell Co. Med. Soc. 342
Tenn. State Med. Assn. 200
Tenth Dist. Med. Soc. of N. C. 555
Travel Study Club of Amer. Physicians 482
Tri-State Med. Assn. of the Carolinas & Va. 813
Va. Academy of Science 201
Va. Pediatric Soc. 555
Va. Public Health Assn. 814
Va. Soc. Oto-Laryngology and Ophthalmology 131
Va. State Board of Health 65
Va. State Board Med. Examiners 199, 338, 746
Va. State Dental Assn. 135
Va. Tuberculosis Assn. 814
Walter Reed Commission, Med. Soc. Va. 756
Walter Reed Med. Soc. 200
Warren-Rappahannock-Page Co. Med. Soc. 539
Warwick Co. Med. Soc. 746
West Va. State Med. Assn. 276
Wise Co. Med. Society 817
Woman's Auxiliary, Amer. Med. Assn. 537
Woman's Aux., Med. Soc. Va. 612
Woman's Aux., Rchd. Acad. Med. 748

Somatic side of the mental patient, The 186
Sphenoid-ethmoid disease, Paralysis of the 3rd, 4th and 6th nerves from 88
Splenectomy, Report of a case of thrombocytopenia (purpura hemorrhagica), with 582
Spontaneous pneumothorax: with report of cases 565
Sputum examinations of 1,425 cases of pulmonary tuberculosis, Report on 159
Standardization of hospitals, Why the? 387
State medicine, The medical profession of Virginia and 647
Sterility 448
Sterilization of masks neglected 471
"Stomach trouble," 419; Case of cancer of the — in an old man, with partial gastrectomy under local anesthesia, 80, 523; The present status of the treatment of ulcer of the — and duodenum, 1; Syphilis of the —: report of a case 249
Stones, Ureteral: forty-one cases with lantern slides, 430; Present method of dealing with kidney and — —, 107; Cause and treatment of urinary — 162
Sudden death 390
Summer diarrhea, The treatment of 285
Surgeon, A country: John Peter Mettauer, A. M., M. D., LL. D. 485
Surgery as applied to the cripple child, 735; Factors in lowering mortality in biliary tract — 435
Surgical indications of inflammatory diseases of the gall-bladder, 315; — *management of handicapped toxic goiter patients: with illustrative cases*, 493; — aspect in gynecology 519
Syphilis of the stomach: report of a case, 249; *Historical notes on —*, 470; — in diabetes 616
Syringes, Removing pistons hung in record 189
Tabes, A valuable diagnostic sign in the early ataxic stage of 7
Temperate zone, Vitamins, radiation and rickets in the 500
Thrombocytopenia, Essential (purpura hemorrhagica): report of cases with splenectomy 582
Thrombosis of the lateral and cavernous sinuses complicating acute mastoiditis: report of two cases involving the cavernous sinus as well as the lateral sinus 437
Thyro-glossal duct, Report of a case of cyst of the 591
Thyroid gland, Iodine medication and the 336
Thyroidism, dys-, Iodine in 310

Tissue diagnosis in the operating room and immediate cover-slip examination of all fluids and pus 805
Tonsillectomy, Complications of 55
Tonsils, Irradiation of diseased 741
Torticollis, The treatment of spasmodic, by intradural posterior root section and extracranial division of the spinal accessory, 761; *Congenital —* 794
Transfusion 129
"Trembles" and "milk sickness" 552
Tuberculosis, pulmonary, Lung collapse in the treatment of, 71; Report on sputum examinations of 1,425 cases of — —, 159; Miliary — of the choroid, 235; The value of the history in the diagnosis of — —, 496; — in diabetes 617
Tuberculous peritonitis treated with air injections, A case of 157
Tularaemia, Notes on 740
Tumors, Breast, with special reference to their diagnosis and treatment, 713; Treatment of — —, 145; Benign — of the male breast, 35; Kidney —: report of cases 713
Ulcer, Hunner's, 737; *The present status of the treatment of — of the stomach and duodenum,* 1; *Simple — of the small intestine,* 4; Medical treatment of peptic —, 40; — — of the bladder: report of ten cases, 305; A practical treatment of duomenal —, 741; Results in 100 cases of gastro-duonedal — treated by medical means 754
Ulcers, Clinical diagnosis of duodeno-pyloric 367
Ultraviolet generators directly to the public, Report on the sale of 743
Ureteral calculi: report of 41 cases, with lantern slides, 430; Present method of dealing with — and kidney stone 107
Urinary calculi, The cause and treatment of, 162; Points about Roentgen examination of the — tract that interest the referring physician, 657; Lesion of the — bladder, 737; Purpura of — tract 772
Urologic conditions in infancy and childhood 451
Urology, Adynamic ileus in 596
Uterine curettage: its limitations, 28; Invasion of pelvic organs by epithelial cells of the —mucosa 176
Vaccination, Methods of 403
Versalius 743
Vincent's infections, Further study of antimony in 248
Vitamins, radiation and rickets in the temperate zone 500
Vomiting of pregnancy, Excessive 78
Waring, Dr. Lawrence Roane, An appreciation of: some brief notes on life and medical practice of a Virginia physician of bygone days 806
Washington, Last illness and death of, 629, 691, 745; — article and *Michigan State Medical Journal* 751
What's it all about? 793
Whooping cough with intramuscular injections of ether, The treatment of 662
Woman's Auxiliary, Why a? 687; *The — — from the National standpoint* 747
Wry-neck, The treatment of spasmodic, by intradural posterior root section and extracranial division of the spinal accessory, 761; Congenital — 794
Xanthine diuretics in congestive heart failure, The value of the 752
X-ray treatment of subacute infections, The, 649; — of the gall-bladder, 281; *The correlation of — findings and clinical findings, especially in diseases of the chest,* 507; Points about —examination of the urinary tract that interest the referring physician, 657; — treatment of skin cancer and allied conditions, 727; — studies of the gall-bladder 798

SQUIBB Professional Service Representatives are serving thousands of physicians yearly, bringing, as they do, valued information concerning improvements on old-established products, and vital facts concerning recent discoveries.

These Representatives are proud of their work, proud of their House, and the Products which bear its name. Physicians everywhere recognize their helpfulness and are ever pleased to welcome them.

The Squibb *Triple Control* is assurance of safety .... of potency, too!

"SATISFACTORY clinical results, Doctor, most certainly can be expected if you use Squibb *Authorized* Scarlet Fever Products.

"Large numbers of your patients have read of the value of the modern method of treating scarlet fever. They rely upon *you* to choose a thoroughly dependable product.

"Squibb Scarlet Fever Antitoxin and Toxin are *AUTHORIZED* PRODUCTS prepared under the following triple control:

1. By laboratory tests and clinical trials in our own Biological Laboratories.

2. By approval of the Hygienic Laboratories at Washington, D. C.

3. By approval of samples of each and every lot after laboratory tests and clinical trials by the Scarlet Fever Committee, Inc.

"This *Triple Control* assures products of absolute and maximum Potency."

SQUIBB *AUTHORIZED* SCARLET FEVER PRODUCTS are accurately standardized, carefully tested, and dispensed in *adequate* dosage.

SCARLET FEVER ANTITOXIN SQUIBB—*Therapeutic Dose.*

SCARLET FEVER ANTITOXIN SQUIBB—*Prophylactic Dose.*

SCARLET FEVER ANTITOXIN SQUIBB—*For Diagnostic Blanching Test.*

SCARLET FEVER TOXIN SQUIBB *For Dick Test.*

SCARLET FEVER TOXIN SQUIBB *For Active Immunization.*

Are you using these important Squibb Products in your *daily practice?*

IPRAL SQUIBB-A Superior Hypnotic. Non-habit-forming; rapid in action; produces sleep which closely approximates the normal.

INSULIN SQUIBB-Accurately standardized and uniformly potent. Highly stable and particularly free from pigment impurities. Has a noteworthy freedom from reaction-producing proteins.

OCCULT BLOOD TEST SQUIBB - A convenient and accurate test for occult blood. Marketed as tablets in bottles of 100 with a dropping bottle of glacial acetic acid.

Write to the Professional Service Department for Full Information

E·R·SQUIBB & SONS, NEW YORK

MANUFACTURING CHEMISTS TO THE MEDICAL PROFESSION SINCE 1858

Nearest Squibb Biological Depots

5-11 North Calvert St., Baltimore, Maryland.

Correct refrigeration of Biological Products is vital to their potency and efficacy. Insist that the source of your supply be equipped with adequate refrigerating facilities.

Capital $1,000,000 Surplus Earned $1,500,000

ESTABLISHED 1892

To act as Executor, Guardian and Trustee

$30,000,000

of investments held in Trust

Confidential Interviews Invited.

Established 1861

HANGER SUBSTITUTE LEGS AND ARMS

—are the result of sixty-five years' experience in limb manufacture.
—are considered Nature's Rivals. Users throughout the entire world recommend and endorse Hanger Limbs as the best obtainable.

J. E. HANGER, Inc.

WASHINGTON, D. C.,
221-223 G. St., N. W.

BLUEFIELD, W. VA.,
614 Raleigh St.

also in 20 other American and European cities.

Three Travelling Representatives in Virginia

INCORPORATED 1871

LIFE INSURANCE COMPANY OF VIRGINIA

RICHMOND, VIRGINIA.

WE WISH TO CALL ATTENTION, ESPECIALLY TO THE YOUNG MEN OF THE MEDICAL PROFESSION, TO THE ADVANTAGES OF THE ECONOMIC POLICY

This form of Insurance is especially adapted to men of moderate means with growing families, the insurance being arranged so as to give the greatest amount of protection at the time most needed and at the lowest possible premium. This policy contains a very attractive convertible clause which makes the contract elastic.

RATES FOR WHOLE LIFE—10-PAYMENT, 15-PAYMENT OR 20-PAYMENT ECONOMIC POLICY WILL BE QUOTED UPON APPLICATION

JOHN G. WALKER, President

The New York Academy of Medicine

THIS BOOK MUST NOT BE RETAINED FOR LONGER THAN ONE WEEK AFTER THE LAST DATE ON THE SLIP UNLESS PERMISSION FOR ITS RENEWAL BE OBTAINED FROM THE LIBRARY.

AUG 23 1927			
APR 4	1929		
AUG 28			
JAN 5	1933		